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SOUTH FREMANTLE POWER STATION MASTER PLAN

Prepared for LandCorp
10 July 2014

HASSELL

Front cover image: South Fremantle Power Station, Foreshore.
Image by HASSELL.

Note: All foreshore enhancements are indicative and subject to more detailed design as part of the structure planning processes.

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Version Control

Version Number	Date Published	Checked By	Authorised	Notes
1	19 March 2014	Robina Crook	Chris Melsom	Final draft for client review
2	22 April 2014	Ishta Kristal	Robina Crook	Include client's revisions
3	17 June 2014	Ishta Kristal	Robina Crook	Include Synergy's revisions
4	20 June 2014	Ishta Kristal	Robina Crook	Include City's revisions
5	10 July 2014	Chris Melsom	Scott Davies	Include final revisions

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The South Fremantle Power Station is located on the coast approximately 4.5km south of Fremantle. It is a prominent landmark within the Cockburn Coast Redevelopment Project area. The redevelopment of the South Fremantle Power Station (Power Station) and surrounding land is anticipated in the approved Cockburn Coast District Structure Plan 2009 (DSP), and the Cockburn Coast District Structure Plan Part 2, 2011 (DSP2), which identifies the site as a high density, urban centre containing a mix of commercial, residential, public purpose, cultural and tourism related uses.

This report presents a vision of the redevelopment potential of the Power Station building and surrounding areas identified within the DSP2 and provides an assessment based on current policy constraints. The report is commissioned by LandCorp on behalf of Synergy (formerly Verve Energy) owner of Lots 2 and 3 Robb Road, North Coogee. Specifically, the Master Plan report addresses the requirements put in place by the Western Australian Planning Commission (WAPC) on Metropolitan Region Scheme (MRS) Amendment 1180/41 to lift the Urban deferred status of the site.

The WAPC has requested that a Master Plan be prepared for the site to inform the preparation of a Local Structure Plan for the Power Station at a later stage.

The WAPC requirements to lift the Urban deferred status of the site are summarised as:
- Land ownership details
- Heritage assessment and demonstration of adaptive reuse of the South Fremantle Power Station
- Consideration of the appropriate use of the abutting foreshore area
- Consideration of how the master plan site would respond to the possible relocation of the switchyard
- Environmental assessment
- Coastal processes assessment
- Infrastructure and servicing, including coastal infrastructure
- Land use and density
- Economic impact and commercial assessment
- Built form and landscape design
- Detailed transport and parking analysis
- Implementation options, including collaboration, staging, planning obligations and incentives.

The lifting of Urban deferment across the study area is an important first step to achieving the long term vision of the Power Station redevelopment. The Master Plan report addresses the above considerations and demonstrates a built form and activity based vision for the Power Station.

The study area is identified in the DSP2 as being:
- A unique urban coastal node – as a principal activity focus within Cockburn Coast
- Potentially an urban/post-industrial version of Sorrento Quay in time;
- Offering a mix of commercial, residential and community-based uses.

The vision for the precinct encapsulates objectives for a high density urban village, high amenity and the adaptive re-use of an important and iconic Power Station building.

There has been significant human intervention along the coast and this presents as an opportunity in the future to integrate with and complement the existing marina at Port Coogee. The potential for a marina associated with the Power Station is something that can be reviewed into the future, with careful consideration of environmental impacts and consultation with the community.

Study Area
The Master Plan has been prepared over an area of approximately 10.6 ha. It includes a number of lots including the land under the Power Station itself, the land immediately to the south of the Power Station (also owned by Synergy), the Western Power owned switchyard area immediately to the north. The beach area immediately to the west of the Power Station building is leased to Synergy until 2054.

A key aspect of this Master Plan is to optimise the adaptive re-use potential of the Power Station buildings in the context of its cultural significance and the physical form of the building, the structural condition of the building and surrounding freight rail. All options developed have assumed the relocation of the existing power transmission infrastructure and realignment of reserve boundaries.

Design Response
The culturally significant Power Station building will be retained and integrated into surrounding land use proposals.

The building is divisible into three main structural volumes which are described in the Master Plan report as the Turbine Hall, the Boiler House and the Switch House. Of these, the Turbine Hall is least suited to major structural or spatial intervention. The Boiler House is more suited to optimising new development, with minimal impact on the heritage significance on the building.

The design response has therefore been to optimise development above the Boiler House at the eastern-most volume for primarily residential purposes, leaving the more voluminous Turbine Hall available for commercial, retail, hospitality, tourism, civic and educational uses.

South Fremantle Power Station - view from north west.

Figure 1.1: Study Area

01 Executive summary

Key Design Elements

The Master Plan design has been influenced by the following design elements:

_Relocation of the switchyard site to the east of Cockburn Road on state government land
_Redevelopment of switchyard site for residential and mixed use development
_Continuous north south pedestrian link and open space between Port Coogee and the Power Station
_Relocated vehicle crossing over freight rail, providing a grade separated access
_Incorporation of sea wall and ponds into the beach front landscape with graded areas, boardwalk and kiosk
_Redeveloped Power Station with potential for galleries, cafes, bars, shops, small offices and public and civic areas in retained Turbine Hall
_New residential apartments in and above the Boiler House of the Power Station
_Beach front landscape restoration and enhancement and potential for a variety of uses and attractions such as public swimming pools
_Improved amenities within the expanded swimming beach
_Pedestrian and cyclist connections to Port Coogee and surrounding areas

Development Response

The Master Plan addressed the requirements of the DSP and DSP2 for a vibrant urban activity centre and showcases the heritage values of the Power Station. The current proposed design also accommodates a number of practical considerations such as the requirement for a grade separated access over the freight line, coastal processes setback and access to Rapid Bus Transit. The ultimate vision is for the Power Station to be the key destination of the Cockburn Coast. In that ultimate development scenario alternative access arrangements and the opportunity for a marina could be further investigated.

Marina option

LandCorp has undertaken preliminary investigations into the potential development of the Master Plan Precinct with, and without a marina. For the purposes of initially Lifting Urban Deferment the Master Plan has been prepared without a marina. Both options have however, been proven to adequately address the primary project requirements including public purpose, civic, retail and commercial floorspace, dwelling number targets, the retention, re-use and upgrading of the Power Station buildings and the public orientation of the surrounding public realm. A marina would become a significant attractor and key destination within the Cockburn Coast redevelopment area. It would also support the long term vision within the existing planning framework. If a marina was to be considered in the future it will involve a significant level of environmental investigation and public consultation.

Amendment 1180/41

The Power Station Master Plan comprehensively addresses the WAPC amendment requirements in the following ways:

Land ownership details

The South Fremantle Power Station Master Plan has been prepared on behalf of LandCorp and Synergy, the landowner of Lots 2 and 3.

The Master Plan addresses heritage, built form and movement requirements for an area larger than Lots 2, 3 and 2167 Robb Road, North Coogee as requested by the WAPC. Lot 1 is owned by Western Power. Lot 2161 is leased by Synergy and has been included to provide a comprehensive design response. Lot 2167 is a crown reserve.

Heritage assessment and demonstration of adaptive reuse of the South Fremantle Power Station

A Heritage Technical Study has been prepared for the study area which examines the response of the proposed development in relation to the heritage value of the building. It demonstrates there are many benefits to the adaptive re-use of the Power Station preserving history and providing a civic place for a local and regional community.

Consideration of the appropriate use of the abutting foreshore area

The redevelopment provides for use of the foreshore area, creating a destination for the community. A process of analysis has ensured the design provides a sensitive and responsive use of the foreshore area. The Foreshore Management Plan prepared for the whole of the Cockburn Coast has informed improvements.

Figure 1.2: South Fremantle Power Station Master Plan. Imagery by HASSELL.

01 Executive summary

Consideration of how the master plan site would respond to the possible relocation of the switchyard
To the north of the Power Station building is an existing Western Power switchyard. The Power Station Master Plan successfully demonstrates how the land would be used for commercial and residential development. The South Fremantle Terminal Substation Switchyard can be relocated to a site east of Cockburn Road. This relocation would allow new development to contribute to a sustainable main street and entrance to the Power Station Precinct. The relocation of the switchyard is essential to achieving the full potential of the Power Station project.

Environmental assessment
A desk top environmental assessment has been undertaken to inform development at the study area. With a significant level of intervention across the study area there is no significant flora or fauna identified within the Master Plan Precinct.

Coastal processes assessment
A coastal vulnerability assessment has been prepared for the Cockburn Coast and the Master Plan Precinct, which examines the development of coastal land and appropriate setbacks. Outcomes place a particular focus on determining an appropriate setback for development which has been implemented in the design of the Master Plan.

Infrastructure and servicing, including coastal infrastructure
The Foreshore Management Plan, Marine and Coastal Engineering, and Infrastructure and Servicing report examine the infrastructure and servicing of the study area. The Foreshore Management Plan demonstrates how the features such as the pooling ponds could be utilised.

The Marine and Coastal Engineering provide an understanding of how the existing infrastructure in the foreshore will interact with the coastal processes over time. In addition, the Infrastructure and Servicing report details the servicing of lots within the Master Plan Precinct.

Land use and density
The Power Station and surrounding land has been identified for residential, retail, commercial and public purpose land uses. The Power Station Master Plan provides for a mix of land uses in support of a vibrant activity centre, focused on the iconic Power Station building. The density of residential land use is high to ensure the activation of the Power Station and offering a new form of high amenity urban living.

Economic impact and commercial assessment
The economic and retail floor space analysis demonstrates how the residential, retail, commercial and public purpose land uses work together to provide a sustainable activity centre in and around the Power Station. This insight has supported the design and decision making process to date.

Built form and landscape design
The built form responds to the beauty, scale and heritage values of the Power Station. With apartments located above the Boiler House of the Power Station, redevelopment reflects the scale of the stacks originally part of the Power Station structure. Retail and commercial development within the Power Station structure activate and contribute to a main street in the heart of the development.

Outside of the Power Station medium - high density residential development offers apartment living with grand views across the ocean to Rottnest. A small portion of the study area has also been set aside for town house development.

The landscape of the area responds to the local context and activities within the Master Plan Precinct as well as the different activity areas for regional visitors. There are more formal spaces for community events within the Power Station. A Foreshore Management Plan has been prepared for the length of the Cockburn Coast Redevelopment project area to provide an integrated approach to a publicly accessible foreshore.

Detailed transport and parking analysis
The Transport Report demonstrates that the proposed development can be serviced within the proposed movement network. The transport approach is informed by the Integrated Transport Plan which demonstrates the value of an efficient public transport system and the importance of a pedestrian focused environment. Each design decision supports public transport options to the Precinct. A number of access options were reviewed and identified the most appropriate option was a bridge to the east of the Power Station. The report identifies how car parking demand will be accommodated throughout the life of the project.

Implementation options, including collaboration, staging, planning obligations and incentives
The Master Plan report provides a process for establishing unencumbered land ready for development. There is a number of planning and business decisions to be made before the Power Station will be available to the local community.
The report provides a step-by-step process to guide development, beginning with the lifting of Urban Deferment, amendments to the Metropolitan Region Scheme and the local planning scheme, closure of road reserves and shifting of the switchyard.

The Power Station Master Plan report comprehensively addresses the requirements of the WAPC and provides the ultimate vision for the future local structure plan. The report:
_Demonstrates the adaptive re-use of the heritage sites, including Power Station and cooling pond
_Identifies a vision for the Master Plan Precinct
_Articulates the proposed built form, scale and intensity of development
_Proposes how the movement network integrates public transport
_Addresses the WAPC requirements for the Lifting of Urban Deferment
_Indicated the process for implementation and staging
The Master Plan provides guidance for the preparation of a Power Station Local Structure Plan clearly defining a planning framework that can support the vision for the Power Station Precinct.


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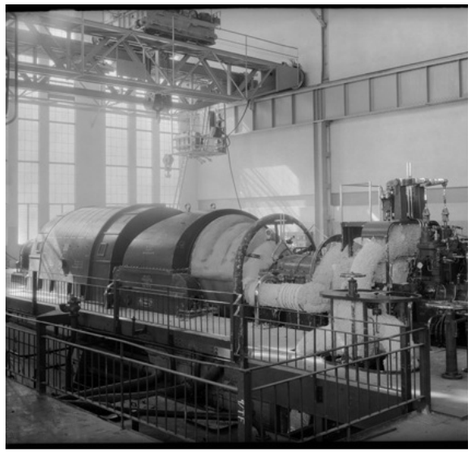
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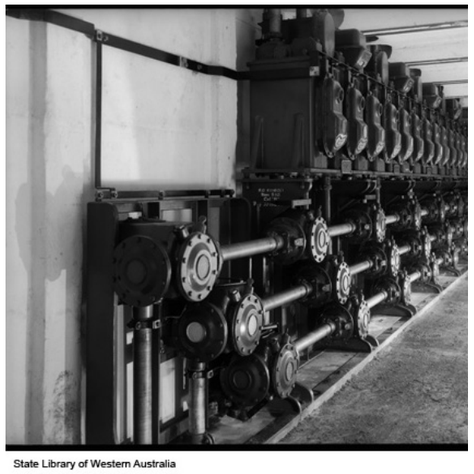
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Original images of the South Fremantle Power Station
Photography from State Library of Western Australia.

02 Introduction

Purpose of this Report

The South Fremantle Power Station Master Plan and report has been prepared on behalf of Synergy, the current landowner of Lots 2 and 3, to address the requirements of the Western Australian Planning Commission (WAPC) in relation to the Metropolitan Region Scheme (MRS) Amendment 1180/41 to lift the 'Urban deferred' status of the study area. The report specifically addresses the current statutory requirements while promoting the vision for the development of the Power Station.

It is expected as the project progresses through the appropriate planning processes the current statutory requirements that impact the development may evolve over time with the strategic drivers underpinning the acceptance of public transport in particular becoming more sophisticated.

In 2012, the WAPC stated that due to the unique nature of the Power Station study area a greater level of detail was required before lifting the Urban Deferment of the land. In addition to the detail provided within the DSP2, a master plan for Lots 2, 3 and 2167 Robb Road, North Coogee, is required that addresses the following criteria:

_Heritage assessment and demonstration of adaptive reuse of the South Fremantle Power Station at a detailed standard – particularly in relation to State Planning Policy 3.5 – Historic Heritage Conservation (Section 6), Planning Bulletin 88 – Historic Heritage Conservation and the Cockburn Coast District Structure Plan
_Consideration of the appropriate use of the foreshore area abutting the Master Plan Precinct
_Consideration of how the master plan site would respond to the possible relocation of the switchyard site
_Land ownership details
_Environmental assessment
_Coastal processes assessment
_Infrastructure and servicing, including coastal infrastructure
_Land use and density
_Economic impact and commercial assessment
_Built form and landscape design
_Detailed transport and parking analysis
_Implementation options, including collaboration, staging, planning obligations and incentives

The WAPC re-iterated that the Master Plan is to guide the preparation of a Local Structure Plan for the Power Station at a later stage in the planning process. The WAPC also indicated that active engagement with relevant stakeholders and government agencies was expected during the preparation of the Master Plan.

The South Fremantle Power Station Master Plan represents a culmination of studies as a comprehensive investigation into the redevelopment and potential adaptive re-use of the Power Station, the surrounding beach front and associated land. After extensive consultation with the current land owners, analysis of development scenarios and liaison with the relevant stakeholders a Master Plan report has been prepared. It addresses the requirements of the WAPC and demonstrates a vision for the area.

Vision and Objectives

The DSP2 re-iterated a vision for the ongoing planning of Cockburn Coast Redevelopment Project:

"To create a vibrant, landmark destination that is connected, integrated, diverse and accessible."

The Power Station plays a very important role in supporting that vision for the Cockburn Coast area. The interim listed Power Station is a visual representation of the industrial history of the area but also an iconic building re-adapted to showcase the residential future of Cockburn Coast.

The following objectives outlined in the DSP2 set the high level aspirations for the Cockburn Coast Redevelopment project:

_Responsive to the context – regionally and the immediate environment
_Establish a sustainability framework for future detailed planning and design
_Enable transit orientated development with appropriate density
_Establish an urban development framework that provides guidance for implementation
_Undertake an inclusive / participatory planning and consultation process
_Create a place with a mix of people, housing, uses, experience and lifestyle

The DSP2 emphasised the importance of the Cockburn Coast heritage with the old South Fremantle Power Station being brought back to life as a dynamic new waterfront centre. Combined with the new Port Coogee marina development, the Power Station will create a regionally significant coastal node for Perth's southern suburbs and potential metro-wide tourist destination.

The vision is to support the Cockburn Coast and the Power Station to be an easily accessible place, with an integrated transit system and offering lively cafés, restaurants, shops, residential and commercial options while supporting tourism, cultural and recreation activities.

It will be a collection of great streets and inspiring public places in which to explore and enjoy the heritage of the Cockburn Coast.

Images of the South Fremantle Power Station. Photography by Consultant team.

‘The Master Plan Precinct is anchored by an iconic landmark, the historic Power Station’s physical dominance should translate into the areas primacy as the key regional destination for the Coast.’

Cockburn Coast Place Making Strategy

Images of the South Fremantle Power Station
Photography by Consultant team.

03 Background

The Precinct

The WAPC specifically requested a Master Plan for Lots 2, 3 and 2167 Robb Road, North Coogee. As development at these lots is influenced by surrounding development, freight line alignment, access to Cockburn Road and location of public transport the Master Plan Precinct also provides guidance for a larger area. The boundary of the Master Plan Precinct is McTaggart Cove to the north, Thetis Lane to the south, the Bus Rapid Transit corridor to the east (including the access to Cockburn Road) and foreshore to the west.

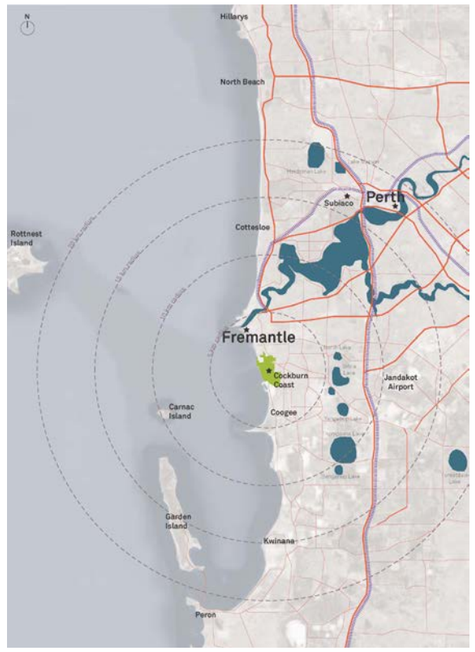


Figure 3.1: Cockburn Coast Regional Context.

The development proposed within the Master Plan is influenced by the activity centre vision, economic drivers and access arrangements.

Land Ownership

The Master Plan comprises Lots 1, 2, 3 and 2167 Robb Road, North Coogee, Lot 2161 McTaggart Cove, North Coogee and McTaggart Cove and Robb Road reserves, with a number of landowners that have significant infrastructure interests.

Lot 1, is owned by Western Power and includes the switchyard. The ultimate success of the Power Station Master Plan relies on the re-location of the switchyard. Western Power will in the future need to upgrade the terminal switchyard to accommodate demand. The intent is to facilitate a coordinated approach to the relocation of the switchyard and the development of the Power Station.

Lots 2 and 3, are owned by Synergy (formerly Verve Energy) and includes the old Power Station structure. In the context of the Cockburn Coast Redevelopment project, a memorandum of understanding between Verve Energy (2011) and LandCorp, was signed with a view to investigating the redevelopment potential of the Power Station.

Lot 2161 is the foreshore to the west of the Power Station, it is owned by the State of Western Australia and leased to Synergy, a successor entity of The State Electricity Commission of Western Australia. The cooling pond and groyne associated with the Power Station are located within this lot.

Lot 2167, is a public open space reserve owned by the Crown, and managed by the City of Cockburn. To achieve a sustainable activity centre within the Master Plan, an appropriate intensity of development is required. A partial redevelopment of Lot 2167 for public promenade and a more appropriate distribution of public open space through the study area will support the vision for the future.

Planning Context

Cockburn Coast District Structure Plan
The Power Station Master Plan is located within the WAPC's Cockburn Coast District Structure Plan, 2009 (DSP). The DSP was prepared with the following objectives:
_responding to the regional context
_establishing a robust framework for the delivery of sustainability objectives
_transitioning arrangements for existing industrial operations
_developing a plan to deliver an intensive mixed use development
The DSP identified the Power Station as a regional destination for the new emerging community.

Figure 3.2: Power Station Case Study Area.

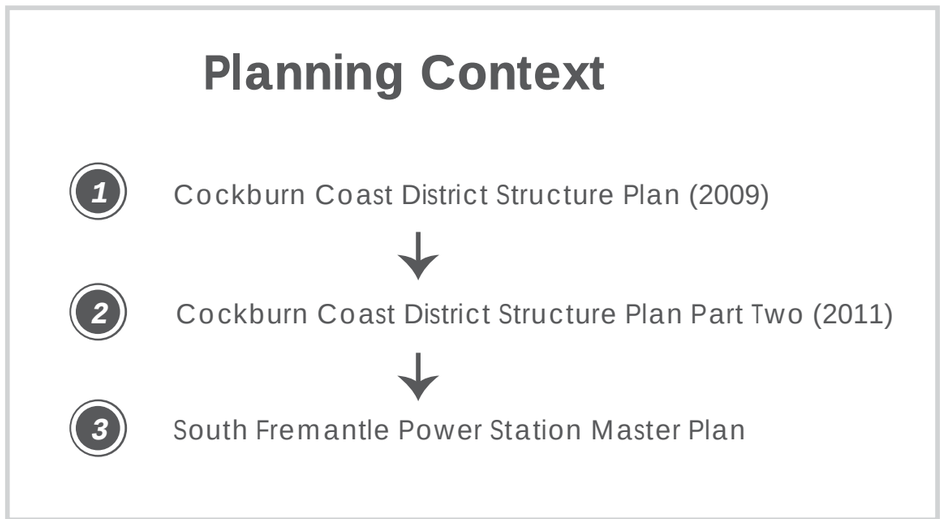


Figure 3.3: Planning Context.

Cockburn Coast District Structure Plan 2
The Cockburn Coast District Structure Plan Part 2, 2011 (DSP2) builds on DSP and serves as a key guiding document, which builds upon the core principles of the DSP and enables greater certainty going forward into the local planning phase.

The DSP2 identifies three logical, distinct and separate local structure plan areas within the larger Cockburn Coast area. These are:
_Robb Jetty
_Emplacement
_Power Station

The Power Station Local Structure Plan area is identified as providing one of two activity centres within the project area. It is envisaged that the Power Station Master Plan area will be the primary employment hub for the Cockburn Coast, while the Robb Jetty centre will focus on the provision of daily shopping needs for residents. These locations have been strategically planned to coincide with the proposed rapid transit lines and station locations.

Community Consultation
The preparation of the DSP and DSP2 and vision for the Power Station Master Plan have all been informed by extensive community consultation. Landowners have been consulted in May, September, November and December 2010. Further detail relating to community consultation is outlined in the stakeholder consultation section of this report.

Study Area Analysis

The iconic Power Station overlooks a beautiful coastal landscape surrounded by infrastructure and abandoned yards. The potential for this study area to become an activity centre that attracts the community is significant. The following provides a brief description of the different characteristics of the Master Plan study area. This analysis has informed the final vision for the Power Station and the surrounding land.

Topography and Study Area Profile
The Cockburn Coast Redevelopment area is dominated by the parallel features of the coastline and ridgeline, which rises approximately 1.5km inland from the coast. The existing Cockburn coastline forms the west boundary of the Master Plan Precinct. The foreshore reserve consists of an elevated primary dune approximately 5m AHD with a swale and secondary dune in some sections. The land behind the South Fremantle Power Station is mapped at an elevation of 12m AHD. The existing levels across the Master Plan Precinct indicate a height differential of up to 7m in some areas. The rail freight line is cut into the rise along the eastern most boundary of the Master Plan [1].

Geology and Soils
Mapping by the Geological Survey of Western Australia indicates that the superficial geology for the majority of the Master Plan Precinct consists of Safety Bay Sand, which is described as being white, medium grained, rounded quartz and shell debris, well sorted, of aeolian origin. The hydraulic conductivity of such soils is high and was estimated at approximately 16 m/day, based on Davidson (1995)[2].

Surface water
There is a limestone ridge present on the eastern edge of the Beeliar Regional Park which effectively splits the Cockburn Coast Redevelopment area into two broad catchments. Surface water to the east of this ridge flows in an easterly direction, while surface water to the west flows in a westerly direction towards the coast. The railway line which runs parallel to the coast until it intersects Cockburn Road in the south of the site represents an artificial barrier to surface water. There is no drainage infrastructure connecting surface water flows to the east and west of this barrier[3].

Runoff generated within the currently developed part of the Cockburn Coast Redevelopment area is generally infiltrated on individual lots in soak wells or is collected in local piped drainage systems and infiltrated in drainage sumps at an individual street or collection of streets scale[4].

Groundwater
The superficial aquifer has been measured at between 0 and 1 m AHD throughout the DSP2 area, which corresponds to depths ranging between 3 and 39 m below ground level according to the Perth Groundwater Atlas (2004).

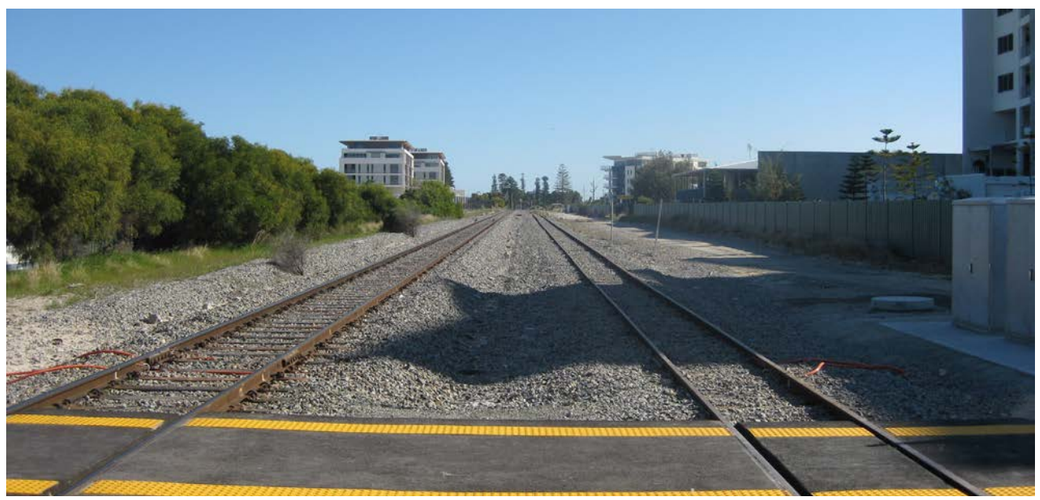
An analysis of available groundwater level data indicates that depths to groundwater range from approximately 24 m BGL at the inland edge of the DSP2 area to a minimum of 3 m BGL close to the coastline. Groundwater levels are typically less than 1 m AHD across the Cockburn Coast Redevelopment area, with some localised variation. Groundwater flow is generally in an east west direction[5].

Vegetation
The Master Plan Precinct is highly disturbed, containing large patches of cleared land. The small portion of the Precinct containing remnant native vegetation, is in the north-east corner along the coastal dune system. This vegetation type is described as:
_Open Grassland of Spinifex longifolius over weed dominated herb layer with areas of rehabilitation on the dunes.
_Associated species include Olearia axillaris, Atriplex sp, Asphodelus fistulosus, Pelargonium capitatum and Tetragonia decumbens.

Cleared areas are now dominated by weed grassland and introduced species, open Shrubland of Leptospermum laevigatum, over a weed dominated herb layer.

The area directly surrounding the Power Station is likely to comprise of a cleared areas dominated by scattered shrubs (likely to be Leptospermum laevigatum) and weed grassland[6].

Freight Rail Line
Playing a central role in defining the development potential of the Power Station Master Plan is the existing freight railway line running north to south and aligned to the east of the Master Plan Precinct. The existing freight line will play a critical role in the expansion of freight movements to and from the Port. At present, approximately eight freight trains run per day along freight line all outside the peak hours. Pressure on the freight line will increase with the volume of shipping at the Port expected to double within ten years with the potential to increase beyond the 30% target.


Freight Rail Line

[1] GHD, 2011, Cockburn Coast District Structure Plan District Water Management, Wood and Grieve Engineers, 2014, Infrastructure Servicing report South Fremantle Power Station Master Plan Area Cockburn Coast.

[2] Information sourced from GHD, 2011, Cockburn Coast District Structure Plan District Water Management.

[3] GHD, 2011, Cockburn Coast District Structure Plan District Water Management

[4] GHD, 2011, Cockburn Coast District Structure Plan District Water Management

[5] GHD, 2011, Cockburn Coast District Structure Plan District Water Management

[6] Ecological, 2013, South Fremantle Power Station Site, Desktop flora and Fauna Assessment

This increase in freight rail movements accords with key government policy to transfer freight movement from roads to rail, but presents a significant barrier for other transport and pedestrian movements throughout the study area. It is envisaged that in order to attain the desired overall volume shipped by rail, an increase in train movements is potentially required although these will be limited to non peak hour periods. The matters associated with noise and vibration management have been taken into consideration during the development of the Master Plan. They will however be specifically addressed through the more detailed local structure planning and development application planning processes.

Negotiation with the Public Transport Authority, owners of the rail reserve and Brookfield, operators of the freight line have identified specific design requirements for access to the Master Plan area. Access to the Power Station Master Plan Precinct is required to be via a grade separated bridge, with a separation distance of 7.2m from the top of the rail line to the undercarriage of the bridge. This has fundamentally shaped the access to the Power Station Master Plan[7].

Existing Beach Amenity
Recreational infrastructure and activities significant to Cockburn Coast have been integrated into the proposed Cockburn Coast Redevelopment project[8]. These elements include parks, beaches, significant trees, heritage and art elements, sandy tracks and pathways distributed across the Cockburn Coast area. The design of the Master Plan Precinct forms part of the integrated approach to development. The existing cooling pond infrastructure will be adapted to provide a safe family beach area and the Power Station will be re-invigorated with civic, retail, commercial and residential land uses. A Foreshore Management Plan detailing these elements will be required as part of the structure planning process.

The Master Plan demonstrates the importance of preserving these existing elements where possible as they play a vital role in defining the character of Cockburn Coast.

Coastal Processes
The design of the Master Plan Precinct has been informed by the consideration of the coastal erosion and accretion patterns for the future of the Cockburn Coast foreshore. In 2010, LandCorp engaged MP Rogers and Associates to complete coastal / maritime engineering investigations to support the preparation of the DSP2. This included a coastal vulnerability assessment based on the State Planning Policy 2.6 - State Coastal Planning Policy (SPP2.6) (WAPC 2003). That assessment utilised the results of Oceanic's 2007 assessment of coastal processes. In July 2013, The SPP2.6 was revised. LandCorp has since re-engaged MP Rogers to complete an assessment of the requirements of the new policy and calculate a revised coastal setback allowance in order to confirm the proposed development would not be impacted by potential coastal erosion. The full 0.9m rise in mean sea level by 2110 was used in this assessment.

The following findings and recommendations have been made as part of the coastal investigations to inform the Master Plan Precinct:

- In general there has been net accretion due to the onshore feed of sand from Success Bank and the trapping action of the various groynes and breakwaters.
- All proposed freehold land (except one lot) is located behind the freight rail corridor or the Physical Processes Setback line calculated to the SPP2.6 (2013). Consequently, freehold development east of the freight rail line would not be under threat from future coastal erosion.
- Development within the one freehold lot west of the freight rail line will be setback in accordance with the Physical Processes Setback Line in accordance with the SPP2.6 (2013).
- All freehold properties will be founded above the minimum finished floor level +3.5 m AHD and avoid inundation from ocean storm surge as required by the SPP2.6 (2013). [9]

Heritage
The Cockburn Coast Redevelopment area and the Power Station Master Plan precinct are rich with heritage. The Power Station is interim listed as a prominent building with a strong functionalist structural industrial form on the State Register of Heritage Places. While actively managed the building is vacant and has been subject to extensive graffiti.

In addition to the Power Station there are also two ship wrecks located in the Master Plan Precinct foreshore. After Perth was founded in 1829, many ships were wrecked along the coastline and around Fremantle. The two shipwrecks, the Diana and James, located in the beach area south west of the power station are concealed beneath the sand. The Diana was shipwrecked on 16 July 1878 in a severe storm drove. The James was shipwrecked on 21 May 1830 after being blown ashore.

Accompanying the Power Station on the State's heritage register is number of heritage places within the Cockburn Coast Redevelopment project area such as Robb Jetty Chimney and the South Beach horse exercise area. Other culturally important sites of heritage significance have been identified as Owen Anchorage, the original Robb Jetty, Afghan camps at Davilak and World War II gun emplacements all contributing to an area rich in heritage[10]. The Manning estate, which includes Azelia Ley, Newmarket Hotel and Randwick Stables is also adjacent to the ockburn Coast Redevelopment project area.

Preserving the heritage values is fundamental to supporting the vision and long term success of the redevelopment of the Power Station. The Master Plan acknowledges the heritage values in the Precinct. The Heritage Technical Study by TPG Heritage specifically identifies the benefits of the proposed development and its contribution to the Cockburn Coast vision.

South Fremantle Beach - view to the west of the Power Station building. Photography by consultant team.

[7] Parsons Brinkerhoff, 2014, South Fremantle Power Station Master Plan Traffic and parking report and Parsons Brinkerhoff, 2011, Cockburn Coast Integrated Transport Plan

[8] HASSELL, 2012, Cockburn Coast Foreshore Management Plan

[9] MP Rogers and Associates, 2014, Cockburn Coast Coastal Vulnerability to 2013 SCPP

[10] TPG Town Planning Urban Design and Heritage, 2014, South Fremantle Power Station Master Plan Technical Heritage Study

The South Fremantle Power Station Building

The iconic Power Station building is the heart of the Master Plan Precinct, which sits within the Cockburn Coast Redevelopment project area. It is part of a rich historical past and present. Preserving the heritage stories allows the development to have its own unique identity and ensures the legacy of the study area will be uncovered and continue to live on.

The Power Station is one of only a handful of post war twentieth century power stations constructed adjacent to water. South Fremantle Power Station stands above the rest, most notably for its position near the ocean and the cathedral like style (amount of openings, windows and fenestrations to the main spaces). South Fremantle Power Station is one of four cathedral style power stations built in the era immediately before and after the second world war. The building far exceeds its functional requirements and is truly representative of great Western Australian Architecture; providing a significant opportunity for high quality adaptive re-use in the context of a vibrant development area.

The Power Station Master Plan is anchored by the iconic landmark, the historic power station's physical dominance should translate into the areas primacy as the key regional destination for the Cockburn Coast. The Power Station is the centre of recreation and leisure activity, a place where community celebrations are held and tourists enjoy multiple experiences that vary with each visit.

Self sustainability is key for the Master Plan Precinct. Activity has to be self generating, with events and destinations attracting a range of users on weekdays, evenings and weekends in summer and winter. The Power Station and surrounding development within the Master Plan delivers social, economic, environmental and cultural outcomes.

Social

The Power Station will attract a full cross section of the local and regional community - families looking for an inexpensive day out, to executives enjoying a long lunch. The proposed development will provide safe places for young children and a series of events and activities to engage youth. For active people with a desire to access the water there will be water sports, boating, exercise tracks and potential outdoor pools.

The public space within the Power Station building (the Urban Park) and the re-development of the foreshore will become the meeting place for local, regional and international tourism. Youth, students, artists, communities and entrepreneurs, will be attracted by an ongoing program of events with an emphasis on creative arts and inspiring new projects. Additionally, families on a day out with their children will visit this space to pause and entertain the family.

The landscape will be contemporary yet comfortable. The landscape will be skatable in some places for youth as well as comfortable for sitting and people watching. Shade and seating will be integrated into the urban fabric where possible, with vendors supporting a program of events.

Economic

The proposed diversity of land uses will establish a sustainable precinct that is accessible to a broad range of the community. The offer will vary from no cost (picnic and swim with the kids) to fine dining. A range of food styles and dining options will be supported. Businesses that support activation of the public realm will be encouraged; learn to snorkel or sail school, bike hire, mobile vendors, and outdoor cinemas will attract the community.

The public areas within the Power Station will focus on entertainment and recreation supported by affordable dining options trading into the piazza, and the opportunity for fine dining options facing the waterfront views. This will be a minimum of 18/7 space with an active evening economy.

Retail, commercial and residential development surrounding the Power Station will contribute to a sustainable activity centre. The intensity of residential development and visitors attracted to the area will ensure a sufficient population to support an evolving and thriving Power Station activity centre. As public transport services improve the intensity of the activity centre will be able to expand to accommodate the vision for the area.

Environmental

The proposed development of the foreshore to preserve the natural and heritage elements while integrating activity zones will provide a net benefit to the environment and great community outcomes. The design supports the dominance of the iconic Power Station. Rough rocks will be tempered with soft steps for sitting and sun baking, lawn areas for comfortable picnicking and modest built form will support smaller water based business, swimming areas and further dining options. The landscaped public open space includes level changes and surface treatments that will hold different scales of activity, attracting different groups of people into the space. The public space to the north will be articulated as a formal piazza in contrast with the public space to the south that will be a more informal active children's park that reinterprets the hidden ship wrecks.

In the future, if a marina was to be considered the Power Station will provide a dramatic backdrop to public life.

Cultural

The Power Station provides a vibrant meeting place for visitors to enjoy installations of art with visiting the beach, dining out or attending other creative entertainment. It is a highly programmed space with opportunities for busking and street art, which will build on the existing culture within the Power Station, surrounded by elements of the existing urban art within the building. The Western Australian culture is characterised by a love of the great outdoors. The foreshore will provide new passive recreation spaces for local residents. The redevelopment of the groyne could become a potential new departure point for active recreation such as walking, playing, swimming, sea kayaking or diving tours.

The Master Plan provides opportunities to bring the creative cultures together with the outdoor culture, providing a chance for a new Cockburn Coast culture to form.

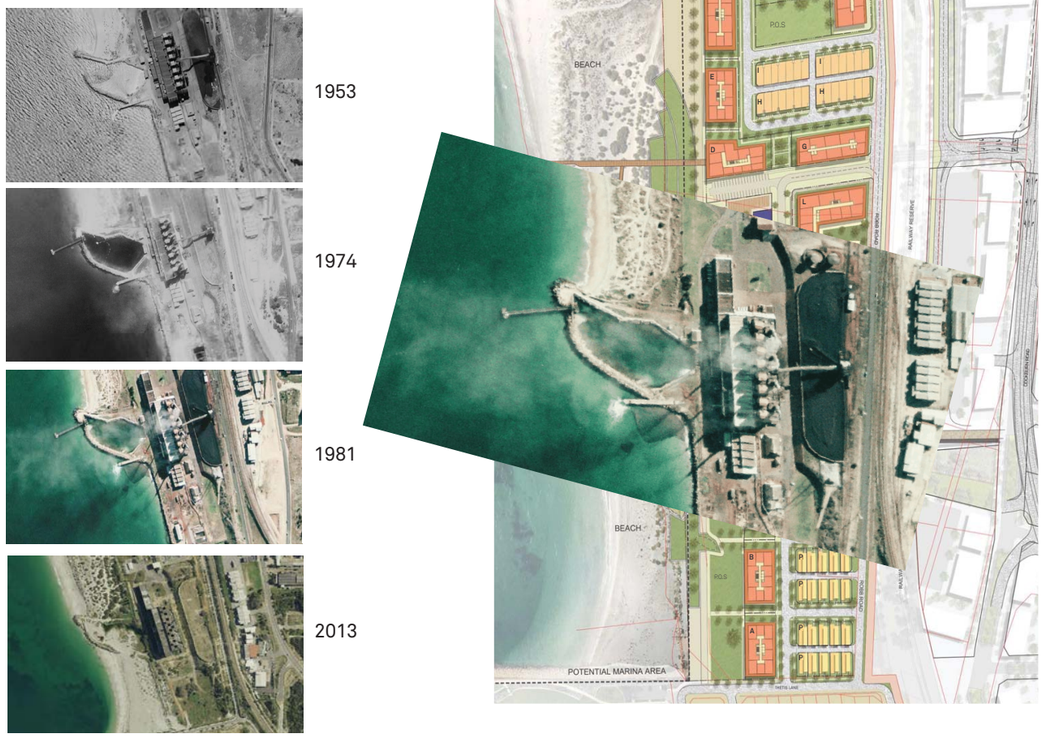


Figure 4.1: Accretion of coast line at Power Station

The extent of foreshore, public realm and public open space enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Figure 4.2: Development and design concept history of the Power Station Master Plan Precinct. Imagery by HASSELL.

Power Station Piazza

All public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Power Station Promenade and Foreshore

All public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

‘The centre of recreation and leisure activity, Power Station is the place where community celebrations are held and tourists enjoy multiple experiences that vary with each visit.’

Cockburn Coast Place Making Strategy

Stories

The Cockburn Coast and Power Station Master Plan Precinct hold many memories and relics; important stories to tell the legacy of the area and the development for future generations. These stories have formed the foundation for the proposed Master Plan and in particular the activation of place.

Indigenous
_Noongar oral history confirms the importance of the coast, the sea and the islands in the Dreaming stories. This includes the Indian Ocean, Garden, Carnac and Rottnest Islands.
_The area surrounding Cockburn Coast was also part of a major Indigenous north south travelling route to places with a good water supply.
_Robb Jetty just to the north of the Master Plan Precinct was once an Indigenous camping, hunting ground and meeting place.

Bushland
_The Power Station lies adjacent to Beeliar Regional Park; belonging to one of the most important systems of wetlands remaining in Perth. Its rich diversity and complexity of ecosystems it is integral to the stories of the place.

European
_The European history of Cockburn Coast started in the 1830s soon after the establishment of the Swan River Colony.
_Investors rather than settlers took up the land around the area leaving their mark on the land, such as Captain Robb.
_Since the early stages of European settlement, the Cockburn Coast foreshore north of the Power Station has been used as a horse exercise, racing and training area. People still exercise their horses there today.

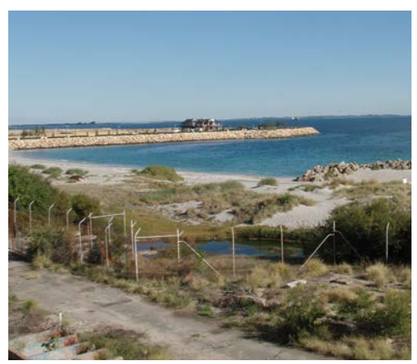
Industrial
_In the early days the abattoirs at Robb Jetty fed the Metropolitan and Goldfield areas.
_In latter years the South Fremantle Power Station was the engine room that supplied electricity to the South West.

Coast
_The key theme relating to the ‘character’ of the Cockburn Coast Development was the phrase “I can see the sea”.
_The Power Station Master Plan maximises connections to the Coast through high quality public open space, and providing for water activities and other outdoor activities.

These stories are integrated into the design approach for the Power Station Master Plan providing guidance in relation to activation, accessibility and sense of place. The stories are infused into every design decision to support and enhance the vision for the area.


View of the ocean from Emplacement Hill. Photography by HASSELL


View of the Power Station groyne


View of Port Coogee from Power Station

The Built Environment

The Master Plan has been developed within the context of the Cockburn Coast Redevelopment project area. The vision fundamentally changes the industrial nature of the area to one that is urban, full of life and has a diversity of activities. The DSP2 identifies some key drivers in relation to the structural elements that have influenced the vision for Cockburn Coast:

_Bringing the 'costal experience' into the project area
_Identify and establish a hierarchy of coastal activity nodes, which includes the Power Station
_Incorporating sustainability and green structures and infrastructure
_Integrating transport and planning processes to create sustainable places
_Reinforcing the physical links to the coast through new east west linkages, both road and public open space

The desired character of the new Cockburn Coast built form includes greater residential and commercial densities structured along key road alignments and within major activity nodes. There is a desire for increased heights of buildings at junctions and entry points to the different project areas, assisting in improved legibility of the new urban landscape. An opportunity for taller buildings will follow the typography with height on the ridgeline to the east of the Master Plan Precinct. This approach establishes a new urban landscape with the unique Power Station at its spectacular heart.

Specifically, the Power Station is identified as an activity node that is a commercial, retail, residential, hospitality and tourism centre. The intent is for the majority of the building stock to be medium to high density residential development, with buildings responding to the objective to create an urban community on the coast.

The Power Station Master Plan reflects the desire for contemporary architectural expression throughout the Cockburn Coast. Buildings will be designed to address adjacent streets, communal areas and public open spaces, through window placement, balconies and entrances.

Active street fronts along the proposed main street will contribute to a safe and vibrant centre to reinforce the vision of the Power Station activity centre. Commercial and retail development requires a high level of detailing at pedestrian level to provide visual interest and scale. Glazing is encouraged, providing transparency and allowing views through into internal activities. Good sustainable lighting, access and visibility will also be provided. Sustainable lighting will be encouraged as an integral part of the built form and throughout the open space areas. Surveillance of streets and public areas will be facilitated by residential development above retail and commercial activities around the Power Station.

The DSP2 states that development adjacent to the South Fremantle Power Station should demonstrate an understanding of context, responding to Power Station building through the composition and materiality without imitation. The Master Plan supports and enhances this approach to redevelopment of the Power Station Precinct. Design guidelines established during the structure planning process will ensure development will be of the highest quality in terms of materiality. Detailing will respond to its study area and context, through texture and colour, as well as being appropriate to the climatic conditions of the region.

Safely and comfort of pedestrians has guided the development of the Master Plan. The movement network has been specifically designed to ensure an attractive pedestrian orientated environment. The primary pedestrian access into the Master Plan Precinct will be across a grade separated bridge, which directly links passengers from the Bus Rapid Transit Station into the Power Station structure. The requirement to provide grade separated access across the freight line has opened up opportunities for integrating access to the precinct. Pedestrians can access the Power Station and the foreshore in many ways. Pedestrians can enjoy the landscaped outdoor public open spaces or walk directly through the Power Station structure, being invited inside to experience the activities and cultural events within the internal Urban Park.

The desire to provide high quality public spaces has influenced the final form of the Master Plan. The Green Link and The Park to the south of the Power Station, the Foreshore to the west and The Piazza to the north all provide different recreational opportunities. These open spaces provide the opportunity to reflect the natural landscape of the Beeliar Reserve, other spaces highlight the opportunities a coastal environment provides and the piazza is a place for a higher intensity of activity. The built form will frame the green corridors and urban open spaces, providing a structure to the places and reinforcing a safe passage for pedestrian and cyclist movement throughout the precinct. Careful consideration of landscape treatments and amenities will ensure the green spaces address the needs of the community are fully functional spaces.

'New and old are juxtaposed, events showcase the innovative and challenging. Creative entrepreneurship is encouraged across multiple fields from energy production, to arts, culture, experiential tourism and business.'

Cockburn Coast Place Making Strategy

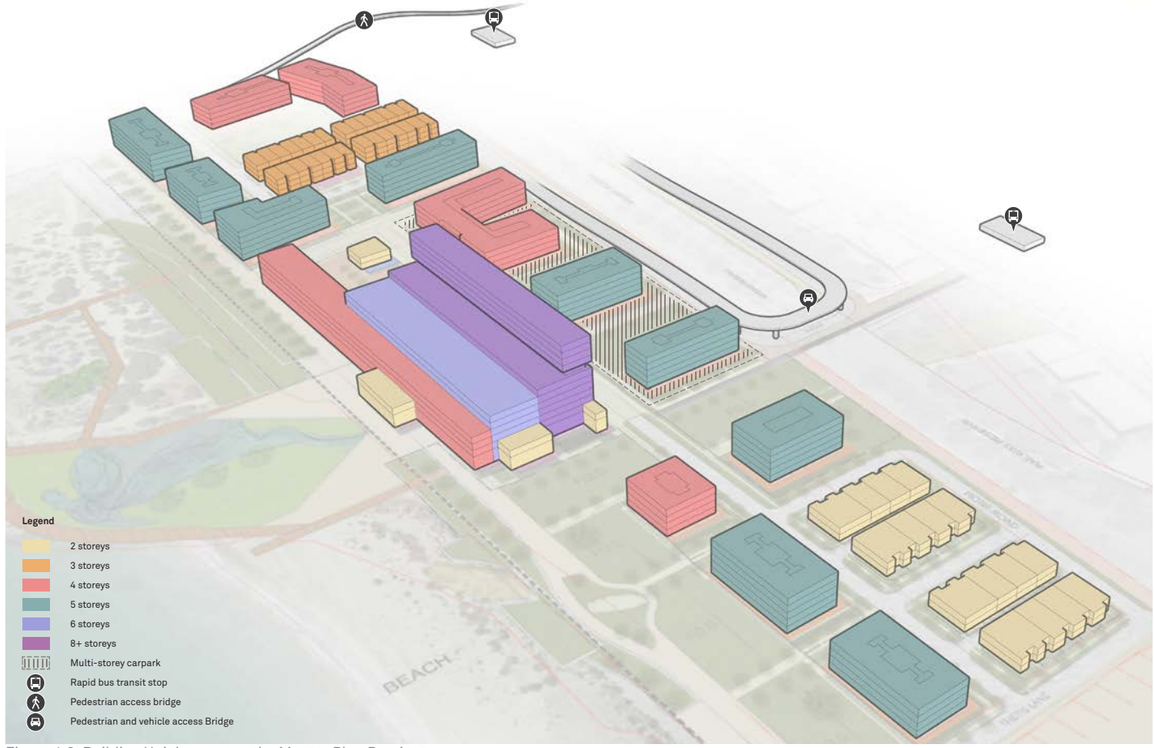


Figure 4.3: Building Heights across the Master Plan Precinct.

Power Station Piazza

All public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Land Use and Activation

Use
The Master Plan envisages a diverse range of land uses and activities. The proposed land uses within the Master Plan respond to the DSP2 vision, which establishes a rationale for the distribution of land uses:

_Focusing intensity and diversity of land use along rapid transit alignment and specifically proposed transit stations
_Locating employment, tourism and recreational opportunities within the Power Station Precinct, in accordance with the objectives of the DSP and DSP2
_Locating a second activity centre along a more localised main street to service day to day needs of local residents, at the Robb Jetty Main Street
_Focusing recreational and entertainment opportunities at specific beach nodes, at Catherine Point, Robb Jetty and the Power Station
_Providing for a range of residential opportunities, with height and density of residential buildings responding to topology, green linkages and proximity to the coast and activity centres

The Power Station is one of two activity centres within the Cockburn Coast Redevelopment area. It will contain a mix of land uses, strategically located next to public transport options. While Robb Jetty will provide for the daily needs of the community the Power Station Activity Centre will provide for the ultimate activity hub in the area. The DSP2 acknowledges the significant infrastructure works, stakeholder negotiations and study area preparation that is required, which will mean the Power Station activity centre will evolve over time.
The vision articulated within DSP2 is for the Power Station to be the primary and ultimate employment hub for Cockburn Coast. In time, it will become an important commercial, recreation and prime visitor destination. The DSP2 identifies the Power Station Master Plan as the preferred location for a hotel or short stay accommodation. These uses will complement the local retailing and small scale commercial opportunities that will be provided along the Robb Jetty Main Street.

The Master Plan provides for a scale of land use that is based on the current policy requirements and liaison with relevant stakeholders. The requirement for grade separated access across the freight line and Cockburn Road continuing to be the primary movement network into the redevelopment has impacts on accessibility and the surrounding public transport networks. The built form also responds to the setback requirements associated with coastal processes.

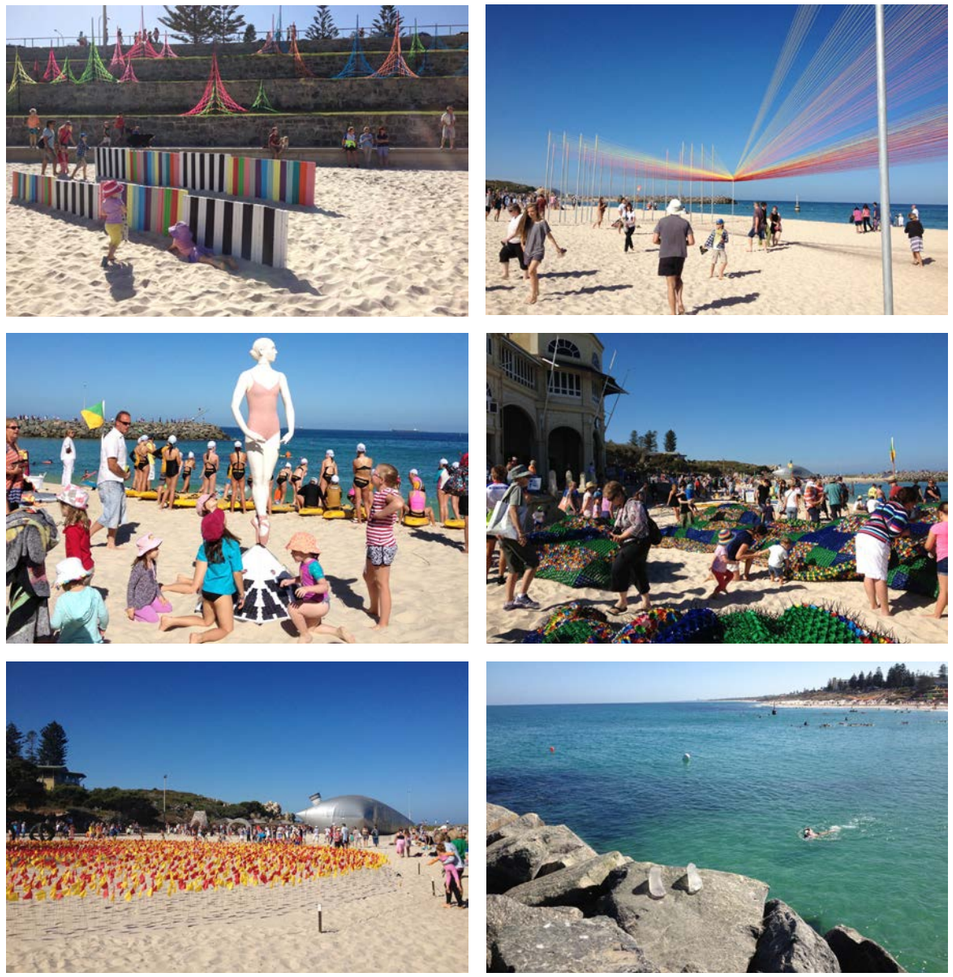
The Master Plan establishes a mixed use development vision and demonstrates the Power Station building and surrounding development can accommodate:

_A mix of land uses across the Precinct
_Public events, shops and offices within the Power Station, distributed across the lower floors
_A diverse mix of retail and commercial land uses within the main street at ground and first floor
_Potential restaurant or kiosk within the foreshore
_Piazza to the north of the Power Station structure
_Some 900 plus dwellings, inclusive of three, two and single bedroom apartments
_Residential dwellings within and above the Power Station structure providing high quality views across the Indian Ocean to Rottnest and Garden Island
_Bus Rapid Transit Stations located on the eastern boundary of the Master Plan Precinct
_A diversity of public open space
_A multi-storey car parking facility to accommodate visitor parking into the future

The final land use and scale will be determined through comprehensive local structure planning taking into account the adopted Robb Jetty and Emplacement Local Structure Plans and development application processes.

In addition to the uses identified, the DSP2 states there is potential in the future to further explore a public marina, which would consolidate the built form opportunities to activate the Power Station building. It is anticipated a marina facility would enable additional infrastructure and commercial opportunities to contribute to the viability of redevelopment of the precinct and the wider Cockburn Coast.

A public marina is an opportunity to enhance the Power Station Precinct, but would be subject to detailed investigation, negotiation, public consultation, design and approval before being contemplated in the future. The marina would need to progress through an environmental and planning approval process.



2014 Sculptures by the Sea exhibition, Cottesloe Beach. Creating a healthy active community within the Master Plan Precinct. Photography by HASSELL.

Activation

Establishing a vibrant activity centre is vital to the success of the Power Station Master Plan Precinct. To ensure the Power Station becomes a local and regional destination resources will need to be allocated to the Precinct along with management of the area. The proposed activities within the Power Station Precinct are underpinned by a collection of diverse uses to provide for a robust community, and support a regional function for the building to ensure the Power Station is a key destination in future.

The Cockburn Coast Place Making Strategy prepared for the DSP2, identifies that the reclamation and conservation of post-industrial landscapes constitutes an important cultural objective, which is inherently sustainable in that it encourages the positive re-use of redundant buildings that are part of our industrial and commercial heritage.

Nationally and internationally, the key driver for the remediation and adaptation of industrial sites within cities is to provide for expanding and increasingly urbanised populations. Treatment and redevelopment of former industrial sites range from total demolition and remediation through to integrated adaptive reuse of industrial infrastructure, each with varying levels of success. Industrial heritage if retained, can provide a point of difference, unique character and focal point to new development. It also adds considerable value to the asset.

Former industrial sites are being redeveloped world wide for a range of uses including:
_Urban parklands/heritage parklands
_Museums of industrial heritage
_Residential and mixed use development (responding to pressure for land and housing in growing cities)
_Art gallery/cultural centres
_Sports complex (new stadium or indoor recreation)
_Affordable housing locations with close proximity and access to services
_Nature conservation/biodiversity/environmental restoration
_Renewable energy production (such as solar power or wind turbines)

The Power Station Master Plan proposes the adaptive reuse model to provide for a mix of land uses including residential, commercial and recreational. This is following the lead of world class examples like the Tate Modern and the Distillery District of Toronto. A combination of these two innovative approaches will see the heritage values of the former industrial site preserved with the benefits that mixed use development bring.

The Cockburn Coast Place Making Strategy identified the importance of a staged approach to activating the Precinct. Specifically, the strategy identifies the need to develop a staged approach to manage the transition of landmark uses such as the redevelopment of the Power Station.

The Power Station, whilst strongly in the public's eye, has been somewhat out of reach (in terms of legal access) since its closure. Re-opening and redevelopment of the Power Station needs to be both inviting and welcoming to the community, especially if it is to become a regional tourist attraction and destination. The appropriate refinements will occur through engagement with the community and the local authority during the implementation process including a comprehensive local structure planning and development application process.

The Master Plan has incorporated the place making recommendations for activation established within the DSP2:
_Power Station is to become a place where everyone from Perth and beyond can feel comfortable visiting
_Power Station to include civic and privatised elements to support a sustainable redevelopment outcome
_Establish a string of destinations within the green links surrounding and within the Master Plan Precinct
_Careful consideration of key destinations, such as Rapid Bus Transit Stations, Piazza, Urban Park and the Foreshore
_Highly activated main street
_Activate the public open spaces with retail beverage offer and public amenity at all price points
_Creation of activity zones around play, food, performance and entertainment

The place activation strategy needs to balance social, economic, environmental and cultural needs of the community while being sustainable to implement.

All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Figure 4.4: South Fremantle Power Station Master Plan Activation Plan

Case Studies

Sydney Power House, Sydney Australia
Key Partner: Power House Museum Date: 2009
Current Use: Science and Technology Museum
Scale: 15,000 sqm
Background:
The building was originally an electric tram power station established in 1902. It is now home to a science and technology museum. After the Sydney tram service stopped in 1961 the building remained derelict and unused until 1979 when the NSW government announced the redevelopment of the site. The building is now one of Australia's most popular museums containing an estimated 500,000 individual artefacts. This 20,000 sqm facility attracts up to 500,000 people annually, functioning as an activity magnet and bringing significant commercial opportunity for the Darling Harbour precinct.

Tate Modern, London UK
Key Partners: Herzog & de Meuron, Tate Gallery Date: Competition 1994-1995, project 1995-1997, realization 1998-2000
Current Use: Modern Art Gallery
Scale: Gross Floor Area: 34,000sqm
Background:
Tate Modern Art Museum currently resides within the Bankside Power Station, a former oil-fired power station, located on the south bank of the River Thames. In 1992 the Tate Trustees announce their plan to create a separate gallery for international modern and contemporary artworks. After a lot competition phase, Swiss firm Herzog & de Meuron were selected as the lead architectures to work on the project. The building now serves as an international yard stick for measuring the successful redevelopment of large scale industrial buildings. Over 5 million visitors per year allow activation of the Thames Riverside, incorporating other hospitality, employment and commercial uses.

Battersea, London UK
Key Partners: Foster + Partners, SP Setia and Sime Darby Date: 2013
Current Use: Vacant
Scale: 39 acres
Background:
Battersea Power Station is one of London's most recognisable and iconic heritage buildings. It began life in the 1930s as a coal-fired power station and was later expanded in the 1950s when an exact duplicate Power Station was built next to the original completing the easily recognisable four chimney structure.
The site was decommissioned in 1983 and since then has remained unused.
The Power Station is currently Grade II heritage listed, due to the iconic art deco style and cultural importance as the largest brick building in Europe. The nature of this heritage listing requires any future redevelopment to preserve the station's four iconic chimneys and wash towers. The Power Station has gone through numerous redevelopment proposals, the most recent of which broke ground mid-way through 2013. The development will contain 3,400 residential dwellings and serve as an activity hub, giving the public access to this important cultural icon. The long process from decommission to redevelopment highlights the hurdles and pitfalls of a success industrial redevelopment.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1. Sydney Powerhouse Museum.
Source: http://www.flickr.com/photos/powerhouse_museum_photography/and; http://media.au.timeout.com/contentFiles/image/museums/museums_powerhouse-sydney.jpg

2. Tate Modern, London

Source: http://www.londontourist.org/tatemodern.jpg

and: http://commons.wikimedia.org/wiki/File:Tate_modern_london_2001_03.jpg

3. Batersea Power Station, London
Source: http://www.batterseapowerstation.co.uk/gallery/


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04 Master Plan

Alf Lechner Museum, Munich Germany
Key Partner: Fischer Architects Date: 2000
Current Use: Contemporary Art Gallery
Scale: Exhibition areas of 1,000m² on the ground floor and 800m² on the upper floor
Background:
Named after one of the most prominent sculptors of the 20th century the Alf Lechner Museum is situated in a converted inner-city, mid-century industrial building in Munich. The building has been restored and reinterpreted to reflect the steel sculptural works of Alf Lechner. This building is a prime example of how heritage and contemporary design can merge to create elegant architecture within the confines of dealing with heritage listed and culturally sensitive buildings. Importantly, it provides public access within a cultural and historic context to allow stories of the city to emerge and enlighten the broader population.

Las Palmas Workshop Building, Rotterdam Netherlands
Key Partner: Benthem Crouwel Architekten Date: 2007
Current Use: Mixed-Use, office, museum and restaurant
Scale: 25,000 m² floor space, Office Penthouse: 2,350 sqm
Background:
The building was originally built to service the marine activities of the Holland-America Line. The building contained warehouses and workshops that helped with day to day operations at the Port in Rotterdam. The workshop building was decommissioned in the early 1990s after which the building was redeveloped to provide a cultural function to the area. The building now contains the Netherlands Photo Museum, a cultural centre and a restaurant as well as the two upper levels being rentable office space. Redevelopment of the workshops buildings catalysed private development and prompted broader urban regeneration, creating jobs and high quality living spaces. Central to the buildings redevelopment and rehabilitation was the addition of penthouse office space on the roof which was designed in a manner that matches the utilitarian character of the building. This office space floats on top a small number of thin, high strength steel columns providing a natural yet distinct extension of the building.

The Distillery District, Toronto Canada
Key Partner: Cityscape Holdings Inc Date: 2001
Current Use: Mixed Use
Scale: 13 acres (53,000m²)
Background:
The distillery district is a large heritage precinct within Toronto, comprising more than 40 individual heritage buildings. During the redevelopment of the area, a strong focus was made of creating a pedestrian orientated environment with strong visual amenity. This character and aesthetic has attracted an organic and eclectic mixture of arts, culture and entertainment businesses to create a vibrant and engaging community neighbourhood. Central to the success of the precinct has been an understanding of the Area's unique 'brand' with land owners refusing to lease any of the retail and restaurant space to chains or franchises and instead looking to occupy the space with unique boutiques, art galleries, restaurants, jewellery stores, cafes, coffeehouses and micro breweries. This approach has ensured the Distillery District is a popular tourist destination, providing an authentic, local experience that is world class in quality.


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4. Alf Lechner Museum, Munchen
5. Las Palmas Workshop Building, Rotterdam
   Source: http://i48.tinypic.com/w98qz5.jpg
6. Distillery District, Toronto
   Source: http://mondomagazine.net/wp-content/uploads/2010/03/Distilley-8.jpg

‘Infrastructure is a more accurate reflection of culture, than anything in an art gallery.’

Artist - Robert Smithson

Social
Power Station Precinct should attract a full cross section of the community, families looking for an inexpensive day out to executives enjoying a long lunch. As such, it will need to provide safe places for young children and activities to engage youth; for active people access to water sports, boating and exercise tracks, for couples romantic dining and quiet picnic areas.

Economic
The dinning offer should vary from no cost (picnic and swim with the kids) to fine dining. A range of food styles and fitouts should be provided across the Precinct. Businesses that support activation of the public realm should be encouraged; learn to snorkel or sail school, bike hire, mobile vendors, swimming and surfing classes, outdoor cinemas -will all attract people to watch them.

Environmental
The re-interpretation of the cooling pond and groyne will need a physical design response that is more intimate and smaller in scale while still balancing the dominance of the Power Station structure. Rough rocks need to be tempered with soft steps for sitting and sun baking, lawn areas for comfortable picnicking and modest built form to support smaller water based businesses.

Cultural
The foreshore will provide a new passive recreation space for local residents and safe swimming area for families. A redeveloped groyne could become a potential departure point for active recreation for tourists such as sea kayaking or diving tours. The predominantly natural foreshore will support walking, swimming and playing.

The Strategy encourages activities to focus on key place making themes for the Master Plan Precinct:
_Intensity - Contrasting new and old, multiple scales, materials. Concentrated community recreation
_Honesty - Expression of raw industry and its materiality. Reflection of community recreation values
_Duality - Balancing regional tourism peaks with local daily activity. Edges and extremes
_Legacy - Investment in community
_Infrastructure - Building a new economy

These themes will be integrated into the key features across the Master Plan Precinct.

Power Station
The internal Urban Park and Piazza associated with the Power Station will be the key destination for the Precinct. In the Piazza the activities will be overlooked by the commercial spaces housed in the Power Station building. The space is the heart of the Master Plan Precinct and will be used to connect the various functions and programs within the Power Station building and other public areas. The Piazza will be a day and night venue with sustainable lighting features to ensure safety in the evenings and programmed events during the day. The Urban Park inside the Power Station will be a space that is used for a series of public events, which may include community events, a museum, art gallery and performance space. The intent is to provide a variety of activities and price points to ensure an inclusive space for the community.

Open Spaces
Public open spaces are distributed throughout the Precinct with high levels of amenity and recreation facilities for the community. The intention is to provide a number of different open spaces with a diversity of character that reflects the variety of users likely to be attracted to the Master Plan Precinct. The events space within the foreshore will focus around re-interpretation of the cooling pond, located directly in front of the Power Station. To the south of the Master Plan Precinct there will be more quiet, shaded and reflective types of open space which are characterised by the reinterpretation of the shipwreck assets buried beneath the ground. Further to the north the open space is a transition between the events space and the beach environments, linking the Power Station to the dual environments to the north.




Photography by HASSELL.

‘The power station is an iconic landmark, its physical dominance should translate into the area’s primacy as the key regional destination for the Coast. The centre of recreation and leisure activity Power Station is the place were community celebrations are held and tourists enjoy multiple experiences that vary with each visit.’

Cockburn Coast Place Making Strategy

Figure 4.5: Place Activation Key Themes

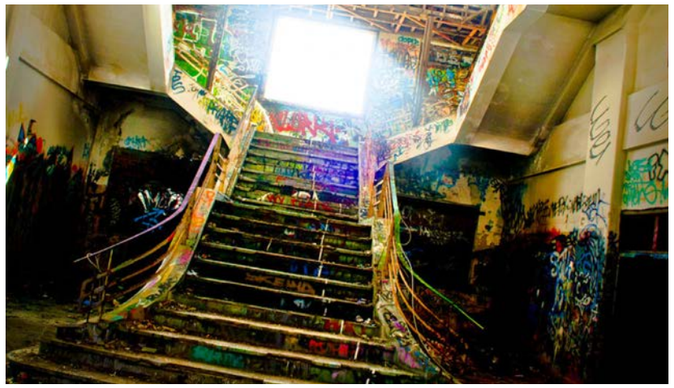
‘The Power Station Activity Centre will ultimately develop into an activity hub that will draw people from around Perth metropolitan area and wider region.’

District Structure Plan Part 2

Art and the Power Station

Place making within the Master Plan Precinct is important to create, support and enhance the existing unique sense of place. The iconic Power Station structure demonstrates excellent examples of Urban Art. A public art trail and supporting program of events could re-enforce that informal, post power generating use of the Power Station and provide an opportunity to showcase the existing art works and provide a space for people to contribute to art in the Precinct.

A place making strategy specifically established for the Power Station Local Structure Plan area will consider a range of place making options.



Live Wires
Temporal art and activation strategy for Power Station Building

As the Power Station will remain a derelict building for some years, it provides a fertile environment for staging temporary public artworks, ephemeral interventions, and performance events. An event-based program is considered an effective means of activating the study area and ‘sparking’ community interest and involvement.

Upcycling
Power Station Gallery – The permanent display of artworks

Provide a space within the Power Station that permanently celebrates the Urban Art of the Power Station. The art can afford to be dramatic, challenging and edgy. This is a place where art can be experimental, temporary, contemporary and innovative. The scale of the building provides a natural balance to works of any scale. Incorporating the current youth works will support the transition of uses.

Creative Laboratory
Artist studios within the Power Station Building

To foster and support local arts and creative practice there is an opportunity to provide low rent studios spaces within the Power Station Precinct. The studios may be available for visual artists, dancers, performance groups, writers, designers, craftspeople, musicians and bands.

Illumination
A Creative Lighting/Projection Scheme for the Power Station

A creative lighting and/or projection design for the building will create a virtual second skin as an evening experience and act as a signifier of new life and purpose in this precinct. This sophisticated evening effect will be complementary to the current day-time artwork ‘skin’ of graffiti and stencil designs which currently occupy the building.

Imagineering
Adjacent to cooling pond and groyne - An Artist Designed Interactive Water-Based Playground.

There is opportunity to create a major children’s play area within this environment which can act as a regional draw-card for broad visitation. An artist-led design for such a playground will ensure a unique outcome and feature of distinction for the precinct.

Into the Sea
Power Station Foreshore and Cockburn Sound - An artwork installation between land and sea.

A world class artwork that creatively captures and expresses the timeless dialogue between land and sea. The work would take the form of a sculptural installation which would occupy study areas both on the land and in the sea.

Layout

The DSP2 report establishes the Power Station building as the most prominent feature of the Master Plan Precinct, nestled within a vibrant, regional activity centre. The layout of development, movement networks and public open space within the Master Plan Precinct ensures visual and physical access to the iconic Power Station. It also facilitates access to the Rapid Bus Transit Corridor linking the Precinct to the region.

The layout responds to the specific opportunities and constraints of the Precinct with the following urban design principles guiding design decisions:

_Preservation of the Power Station structure as the heart of the Precinct
_Incorporate view corridors across the Precinct that support the concept of "I see the sea"
_Opportunities for place activation that support the prominence of the Power Station
_Distribution of high amenity public open space that supports a healthy active community
_Diversity of residential development options within close proximity public transport options
_Diversity of land uses concentrated in and around the Power Station building to attract visitors and establish a level of economic self sufficiency
_A pedestrian focused movement network linking pedestrians and public transport opportunities
_Linkages across the Precinct in an east west alignment to connect the Power Station back into the Cockburn Coast Redevelopment Project area
_Establishing direct visual and pedestrian links north south across the Precinct, taking in attractions such as the Power Station structure, Urban Park, Piazza and main street.

Development is arranged in a grid like structure with a pedestrian focus around the curtilage of the Power Station structure. The design specifically provides multiple pedestrian access points from transit nodes directly into the Power Station, creating a network of pedestrian paths across and through buildings that acts as the primary movement network for visitors.

The movement networks are aligned to provide pedestrians, cyclists and motorists with an opportunity to catch glimpses of the ocean. When travelling along the principal shared path, the Rapid Bus Transit corridor or Cockburn Road the cyclists, passengers and motorists will see the sea. The promenade to the west of the Power Station provides uninterrupted views of the ocean.

The road network is designed deliberately to prevent rat running through the Precinct. Portions of the roads around the Power Station are shared, providing the pedestrians with primacy over the car. Direct pedestrian and cycle paths frame the Precinct emphasising the important of walking and cycling in the Precinct.

Scale

The dominance but simplicity of the Power Station building provides a backdrop for contrasting built form that explores scale, materiality and colour. The vision for the Power Station Master Plan Precinct is a scale and intensity of land use that is urban in nature. While other areas of Cockburn Coast Redevelopment project will transition from suburban to urban, the Power Station will provide a place of urbanity and concentrated community investment.

The DSP2 states development around the Power Station will be the most intense urban node in the Cockburn Coast Redevelopment project area. It will incorporate contemporary buildings, shared streets, public piazza and an adapted Power Station building, which will accommodate a range of commercial, civic and community functions, as well as residential dwellings.

The Precinct will have a strong built form presence, given that it is located at the southern entrance into Cockburn Coast and interfaces with Port Coogee. This sense of place will be achieved through high quality architectural form and larger buildings.

The development blocks are larger to encourage a form of development that is urban and high residential density in nature, with apartment blocks up to six to eight storeys.

The large amount of local public open space in the Precinct and the proximity to the foreshore allows a greater amount of site cover on each development lot. The intent is for development to be forward of the lot and addressing the street positively contributing to the activation of the public realm. Car parking is likely to be located in an under croft arrangement beneath the residential development. No car parking is proposed within the Power Station structure.

The scale of development is in response to the prominence of the Power Station structure. Residential development has been proposed above the Power Station Boiler House and will extend to the height of the previously in situ stacks. All other development across the Precinct is to be less than that final height.

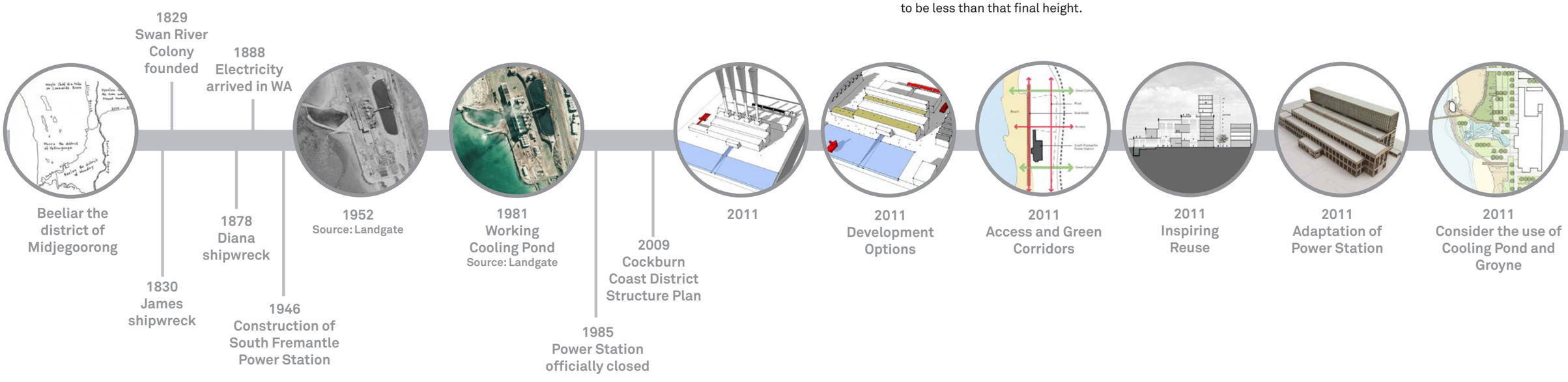


Figure 4.6: Development history of the Power Station Master Plan Precinct.

Height

The height of development across the Master Plan Precinct reflects the height of development proposed in the DSP2, which promotes overall building heights to increase in activity centres, facilitating an intensification of use.

The DSP2 indicates the Power Station Master Plan Precinct provides for heights ranging from a minimum of five storeys to a maximum eight storeys. Anything above eight storeys is subject to a structure planning process.

The process of preparing the Power Station Master Plan has required an assessment of the Power Station structure and the proposed development. The Power Station Master Plan demonstrates the ability to provide for a mix of heights in the area in accordance with the DSP2.

The following is a development scenario that addresses the desire for an intensity of development while also accommodating the requirements of the surrounding movement network and coastal setbacks.

The Power Station Master Plan provides for:
_Predominately five storey apartment buildings centrally located to the area
_Three storey walk up apartments to provide a diversity of product
_Limited two and three storey single residential to the south transition to adjoining low rise development
_Retail and commercial development located along the main street and sleeved behind the iconic Power Station structure up to two storeys

Residential development above the Power Station structure emulates the height of the four stacks that were once above the Power Station Structure. By adapting the old uses into a mix of new uses the iconic structure will be preserved within the precinct.

The final building heights are to be determined within an adopted local structure plan for the area.

Character
Many design elements contribute to the appearance or character of the Precinct. The textures, tones and materials should reflect the local sense of place inspired by the simplicity and elegance of the Power Station. Each development is to positively contribute to the overall visual context of the Precinct and reflect the vertical form established through the architectural elements of the Power Station. Development within the Power Station Master Plan will be required to have a high quality finish in keeping with a contemporary architectural approach.
Visually engaging facades positively contribute to the public realm. An articulated facade is important and the inclusions of fenestrations, entrances, balconies and awnings support interaction with the public realm and break up the facade. Each development is to be finished with fine grain architectural elements.

Exposed parapet or boundary walls must have a high standard of finish that includes texture, patterning or diversity of materials to support a visually interesting streetscape. Development at the ground floor must be of a pedestrian scale including well-delineated lobbies, well-lit and safe access points and inviting shop or office fronts. Services such as ducting, air conditioner, plants, pipes, lift over-runs, service doors must be screened from the public view.

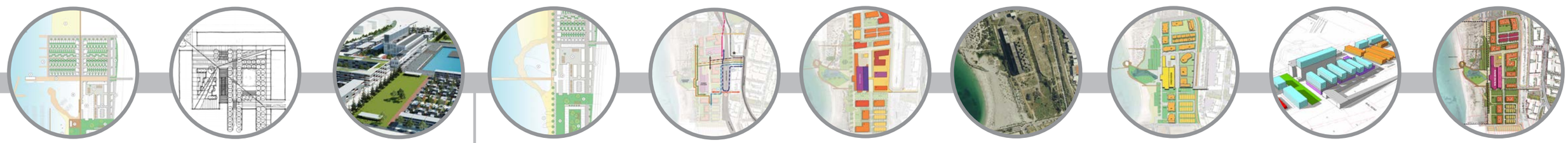
The roof of any development, as seen from the street or adjoining sites, should be designed to make a contemporary and positive architectural contribution to the streetscape. A roof form can where appropriate, contribute to the enhancement of place and establish a local landmark, by integrating architectural form and detailing. Sustainable lighting can be used to accentuate the roofscape to provide a feature at night.

The appearance of development is to integrate crime prevention through environmental design (CPTED) principles. Actual and perceived safety is vital to achieving a vibrant, diverse and active place. Sustainable lighting is to be integrated into the built form to highlight architectural features. It is important to light egress and access areas. Pedestrian entrances and awnings are to integrate sustainable lighting to provide a safe and inviting interface with the public realm.

Signage is to be kept to a minimum, where signage is required it is to be integrated into the architectural expression of the development.

Activation of the edge of the building and the interface with the public realm is critical to the overall Precinct sense of place. The activation and passive surveillance of the streetscape and public open space is fundamental to providing an attractive destination. Major openings are to be provided to overlook public areas including alfresco dining areas, pedestrian shelter and building entrances.

Shop fronts and commercial development on the ground floor of development is to incorporate a high percentage of clear glazing providing a visual link between public and commercial space.
The location of car parking can have a large impact on the character of a place.



‘The mother art is architecture. Without an architecture of our own we have no soul of our own civilization.’

Frank Lloyd Wright

The layout of the Precinct encourages the use of public transport supporting a pedestrian dominated environment. However, where car parking required it is to be sleeved behind or beneath buildings, as a secondary element in the streetscape, concealed from public view. The car parking to the east of the Power Station within the Master Plan area will be sleeved with retail and commercial development. Any non-activated facades are to be designed to provide for innovative detailing, decorative screening, patterning and vegetation. Where possible access to car parking shall be subservient to pedestrian entries and reciprocal use of commercial car parking bays will be encouraged. Within the multi-storey car parking facility, internal access ways to service residential, retail and commercial development shall be designed to facilitate the adjoining development and where logical allow for reciprocal access arrangements. Signage is to be kept to a minimum, where signage is required it is to be integrated into the architectural expression of the development.

Activation of the edge of the building and the interface with the public realm is critical to the overall Precinct sense of place. The activation and passive surveillance of the streetscape and public open space is fundamental to providing an attractive destination. Major openings are to be provided to overlook public areas including alfresco dining areas, pedestrian shelter and building entrances.

All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

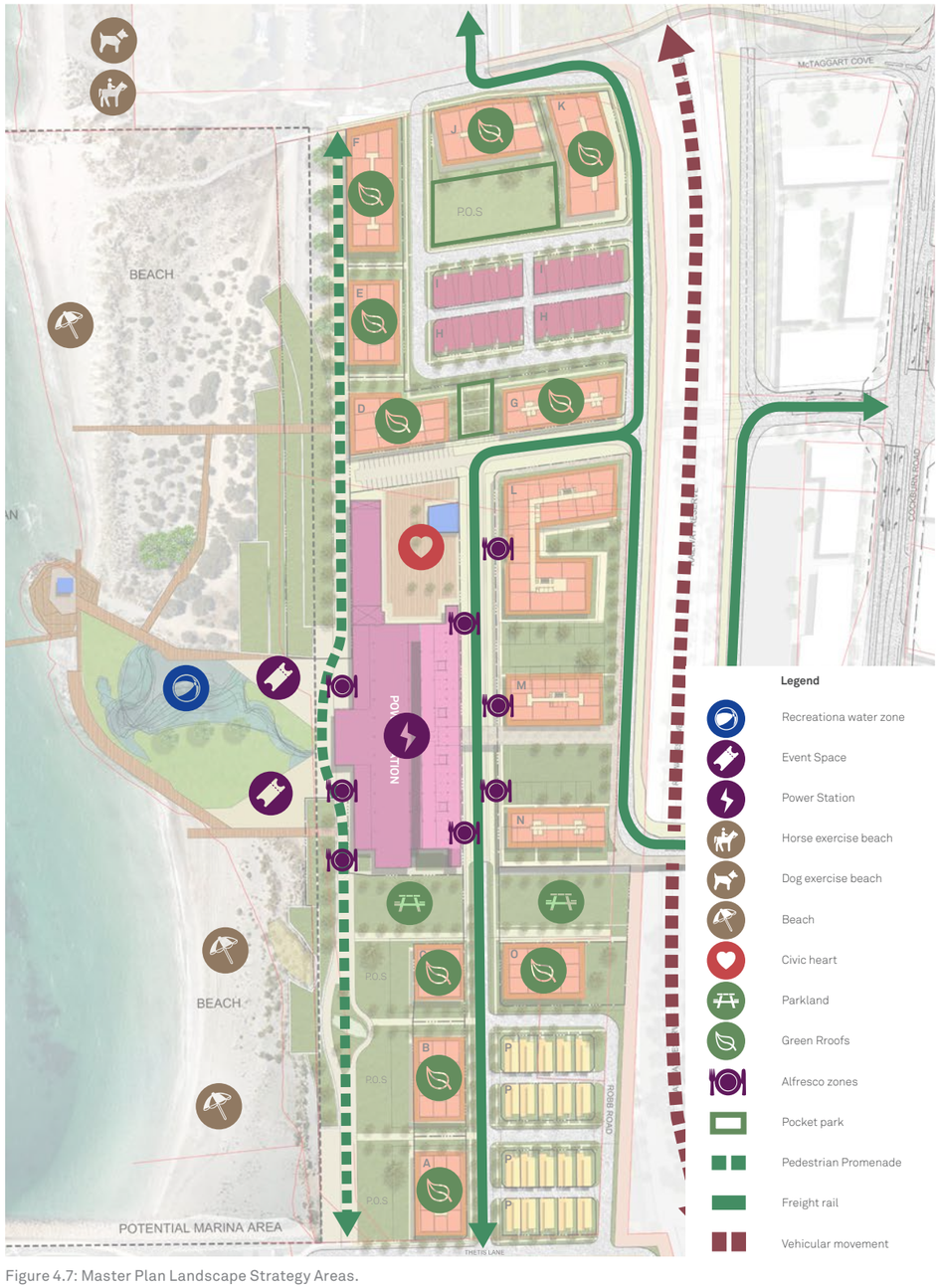


Figure 4.7: Master Plan Landscape Strategy Areas.

Landscape

The redevelopment of the Power Station Master Plan Precinct represents an exciting opportunity to create a landscape, which forms the setting for a new residential, business and leisure community. The redeveloped Power Station and the proposed mixed use development supports the creation of place providing for a wide variety of activities.

From quiet residential roads to large event sized parks and the piazza, the public realm will complement the emerging architectural language to create a new sense of place which draws heavily from the rich architectural and industrial legacy and the beautiful Cockburn Sound coastline.

It is important that the design of the public realm integrates with the overall style and character adopted for the wider Power Station Precinct. The themes developed within the architectural styles will transfer to the landscape architecture. The Cockburn Sound coastal environment, the impact of the sun, wind and salt will influence the landscape design response so robust elements and comfortable spaces are integrated into the Precinct.

The Master Plan Precinct can be divided into five landscape character zones:

_Activity – the heart of the Master Plan Precinct includes the Power Station
_Residential – generally to the north and south of the Power Station
_Green Link – an extension of the regional green network throughout the Cockburn Coast Redevelopment area
_Beach and sand dune – providing the community access to natural coastal areas
_Streetscapes – designed specifically to prioritise pedestrians' safety and comfort

Activity Zone
The landscape around the Power Station can be developed with boldness and imagination to support the vision for it to become a vibrant commercial and public purpose node, which includes retail, restaurants and cafes.

The main areas are:
_The Power Station Urban Park
_The Power Station Piazza
_The Promenade
_The Foreshore

The Power Station Urban Park
The landscape will flow into the Power Station and integrate with the dramatic open space within the structure of the building. It will become an Urban Park, sheltered from the wind but flooded with light from the windows of the building.

Structural walls and uprights can merge with regenerative planting to create vertical forms and walls that soften the space. Areas can be created for programmed events such as cinema, plays and exhibitions. Retail and food and beverage will ensure the space is activated and help to provide valuable passive surveillance.

By embracing the distressed grandeur of the Power Station it will be possible to retain some of the existing urban art (graffiti) and existing columns and walls in their current form to reflect the post industrial style and texture into the development.

The Power Station Piazza
The Piazza to the north of the Power Station is a sheltered, activated space which allows for retail, commercial and leisure activities to form the gateway to the Power Station entrance and provide a different kind of urban space from the promenades and parks which adjoin the coastline.

The piazza will integrate hard and soft landscaping to form comfortable spaces for a wide range and scale of activities from individuals to large group programmed events.

The proportion of hard to soft landscape is important to determine to ensure the space creates a welcoming micro-climate. Trees and shade structures are important elements to mitigate the strong sun.

The industrial vernacular will be expressed through structures designed to reflect the Power Station vernacular and reference the production of electricity. Planters, street furniture and lighting pole design will reflect the industrial vernacular language.

Planting will expand upon the theme of regeneration and sustainability by adopting an 'expressive ecology' approach to vegetation establishment which uses native perennial species in keeping with the post industrial landscape feel.

Figure 4.8: Landscape Character Zones.

04 Master Plan

The Promenade
The promenade is to be a heavily activated space to the front of the Power Station, which integrates retail, food and beverage and entertainment facilities. It is important a well proportioned ground plane is formed at the base of the Power Station which allows the building a setting respectful of its mass and scale.

The promenade should reflect the building form and work with the facade elements and allow for views from the coast to the Power Station. Appropriately scaled trees and vegetation can be introduced to provide a soft foil and help with shading the alfresco cafes and restaurants.

Seating and street furniture should be sensitively placed and carefully designed, allowing the architecture to remain prominent and maintain its stature as the focal point of the coastline but also create an inviting public realm.

The Foreshore
The Promenade creates a controlled interface between the urban nature of open spaces of the Power Station Urban Park and Piazza and the more low key and ephemeral facilities offered in the foreshore, where the design needs to responds to dynamic nature of the coastline.

The foreshore in front of the Power Station contains significant heritage elements, including wreck locations, and the Power Station cooling pond protected by existing seawalls. The final design for facilities within the foreshore will need to both respect and interpret these elements, utilising materials and construction techniques that preserve the heritage fabric and do not interfere with coastal erosion or accretion processes.

While the detailed concept for the foreshore area is still unresolved with relevant local authorities it is likely to utilise boardwalks and decks which allow physical and visual access to the shoreline focused around the cooling pond and seawalls. This infrastructure may incorporate shelters, beach access ramp/stairs, temporary facilities such as kiosks and outdoor pools.

Proposals to landscape and enhance the cooling pond and groyne area associated with the Power Station will need to be carefully designed to accommodate all technical and statutory requirements.

Image references page 30

01 Source;http://www.vamospanish.com/blog/2011/11/25/great-people-watching-spots-in-buenos-aires/

02 Project; South Fremantle Power Station, Source; HASSELL

03 Sources; http://brokensidewalk.com/2008/12/12/tree-massacre-at-the-national-city-tower/

04 Project; Port Coogee Redevelopment, Photographer; Andrew Nugent HASSELL

05 Project; Port Coogee Redevelopment, Photographer; Andrew Nugent HASSELL

06

07 Project; Port Coogee Redevelopment, Photographer; Andrew Nugent HASSELL

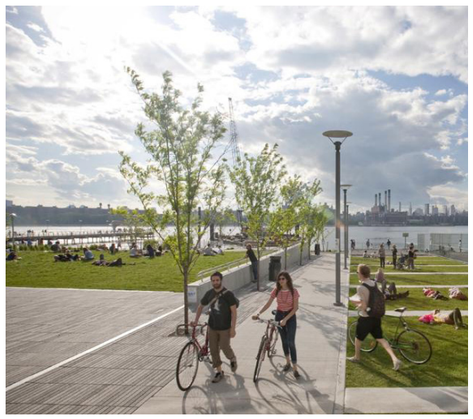
08 Project; FSH State Rehabilitation Services, Photographer; Peter Bennetts

09 Architect; Hawthorne Tomkins. Source; http://www.whowithwhat.com/company/ArchitectDetail.php?name=Haworth%20Tompkins

01_The Power Station Urban Park and Piazza are activated urban spaces which allow for retail, commercial and leisure activities 02

03

04_The Promenade and Foreshore combine heavily activated spaces with more informal picnic and recreation spaces 05



06

Image references page 31

01 Project; Port Coogee Redevelopment, Photographer; Andrew Nugent HASSELL

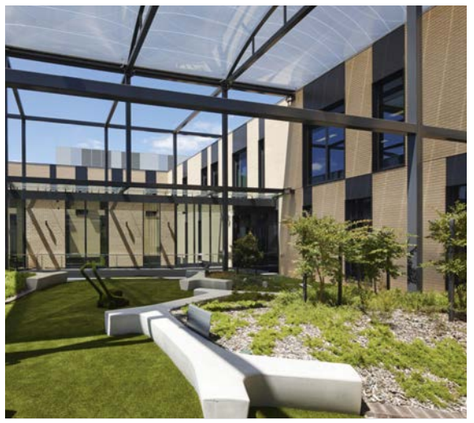
02 Project; Medlock Ames California, Photographer; Marion Brenner

03 Project; Gulf Islands Seashore Dunes Nature Trail, Sources; http://filmnorthflorida.com/photos/

04 Location; Cockburn Coast Foreshore, Source; HASSELL

05 Location; Kings Street Perth, Source; HASSELL

06 Location; Bay View Terrace Claremont, Source; HASSELL



07_The Residential areas provide opportunities for community activation. 08

09

‘Architecture is a social act and the material theatre of human activity.’

Spiro Kostof

Residential Zone
The landscape of the residential area to the north and south of the Power Station Precinct will provide the setting for the dwellings and create opportunities for community activation.

The modern, post industrial landscape typology will manifest itself through public open space design, individual furniture elements, materiality and street design.

Inspiration is taken from the new and old architecture to create a landscape that responds to and works with the detailing, facades, grid patterning and materials used in the buildings.

Balconies of generous proportion and roof gardens will provide dramatic views of the surrounding land, ocean and skies. The development should look to create communal gardens with decked areas, BBQs and planting that reflect the elements within the public gardens to positively contribute to a local sense of place.

The Community Garden
Within the residential blocks there is an opportunity to create a community garden space which caters for the full range of demographics living in the neighbourhood. Quiet places to site can be integrated amongst the allotments. Public play areas, BBQ spaces and larger kick about areas can also give a wide range of landscape experiences.

The Park
An opportunity exists to create an exciting new parkland landscape to the south west of the Power Station. This large green space linking the residential areas to the foreshore promenade can provide for multi-functional activities, both programmed and spontaneous.

Areas of lawn will link with seating areas shelters, artwork, path networks and innovative sculptural elements, which embrace the post industrial vernacular. Areas of manicured lawns will combine with planted areas and gravel areas integrating the ‘expressive ecology’ planting style and remnant industrial features to create a unique space.

A local urban water management strategy will inform the structure planning processes and address matters relating to irrigation.

The Beach and Dunes
Access to the beach and dune system is an important part of living in the Power Station Master Plan Precinct and landscape elements should be considered which encourage this, while protecting the delicate ecosystem.

Decked walkways with stepped and ramped changes of level can work with a series of seating and shelter points to create a network which facilitates use and adds further opportunities for experiencing the landscape. Showering and drinking water facilities will be provided to enhance the beach experience.

Care will be taken to ensure the vegetation and native fauna are protected during the design and implementation process. It will be important to work with environmental specialists and stakeholders to create a network, which is both sensitive to the environment and activates and stimulates the community.

In addition, a fire management plan will be prepared as part of the detailed structure planning processes.

01_The Green Link will provide pedestrian prioritised spaces including intimate and more active spaces

02

03_Decked walkways will provide amenity and access while reducing the impact on coastal vegetation

04

05_Main Street will be a shared use surface that prioritises people over vehicles

06

Contamination and Remediation Processes

The Power Station Master Plan identifies the processes by which any matters of contamination and remediation associated with previous land use within the precinct will be addressed. Section 11 of the Contaminated Sites Act 2003 requires known or suspected contaminated sites to be reported to the Department of Environment by:

1. the owner or occupier of the site;
2. a person who knows, or suspects, that he or she has caused, or contributed to, the contamination or;
3. an auditor engaged to provide a report that is required for the purposes of Contaminated Sites Act 2003.

The nature of the industrial uses at the Power Station building and surrounding land uses indicate the need to assess the site under the Contaminated Sites Act 2003. Preliminary site investigations identity that the cooling ponds and building foot print will be required to progress through a remediation process to address the presence of contamination as part of future development.

There are a number of different ways to address the contamination and remediation of land within the Power Station Precinct. The following processes will occur at different stages during the development and planning process:

- Voluntary Process

At any time the landowner can enter into a voluntary or audited process of remediation of known contamination sites, this allows the landowner to prepare the site for development or sale of the land in advance of formal planning processes. The landowner in the precinct is currently progressing through this process.

- Amendment of Local Planning Scheme

As part of a proposed amendment to the Local Planning Scheme, the Environmental Protection Authority will review the suitability of the proposed land use within the context of the proposed development consider whether the amendment should be formally assessed is respect of its environmental accessibility, as per S.48A of the Environmental Protection Act 1986. This must also demonstrate how the arrangement of zones/reserves as depicted in the scheme amendment have been informed by and respond to the contamination issue. To ensure a separate local planning scheme amendment takes place, the master plan will not seek to concurrently amend the local planning scheme as part of the lifting of urban deferment (refer s. 126 of the Planning and Development Act 2005). An application to the Western Australian Planning Commission to amend the local scheme will be required to outline the processes required to address any contamination and remediation matters. The Department of Environment and Resources recommend that the identification of known and suspected (potential) sites of soil and/or groundwater contamination is based on Preliminary Site Investigations (PSI). Documentation should indicate the practicability of managing/ remediating the possible type and extent of contamination.

- Local Structure Plan

A landowner or local authority is able to initiate the preparation of a Power Station Local Structure Plan, which will be informed by a detailed review of any contamination matters. The plan can be informed by the Environmental Protection Authority processes being undertaken or by engaging a suitably qualified professional to prepare the required technical studies. Will needs to again demonstrate how the contaminated site issue has been appropriately addressed and managed.

- Application for Subdivision and Development

After adoption of the Local Structure Plan a landowner is able to lodge an Application for Approval of Freehold or Survey Strata Subdivision or an application for development approval. As part of the application, where the land has been potentially used for a potentially contaminating activity, or where it has been reported, required to be reported or classified under the Contaminated Sites Act 2003, the applicant must provide a Basic Summary of Records from the Department of Environment Regulation and Conservation. This informs the Western Australian Planning Commission and Local Government and provide guidance on any conditions of development that may be required. The Department of Environment and Resources recommend that placement of enforceable conditions to require appropriate site investigation and remediation, prior to any development construction works.

At any stage the site is able to be reported to the Department of Environment to be assessed and classified by the Department in terms of the risks contamination poses to the environment and human health under current and more sensitive land uses. Under Section 58 (6) of the Contaminated Sites Act 2003, states that if a memorial is registered under this section then the Western Australian Planning Commission is not to approve subdivision or amalgamation of land, or a responsible authority is not to grant approval under a local scheme without considering the suitability of the land for the proposed subdivision, amalgamation or development.

The intention is, that prior to, or as a condition of subdivision or development the landowners within the Power Station Precinct will progress through a process that resolves any contamination issues. The environment and planning processes will ensure that all development including residential and public land use activities will meet the required standards and protect the community from any contamination issues.

Streetscapes

Within the Power Station Master Plan Precinct pedestrian and cycle use is given a greater priority than the movement of vehicles. The presence of cars in the development will be managed to ensure they do not dominate the public realm environment and the design of the streetscape will support this approach. Street furniture will be multi-functional and positioned discretely to ensure the environment has a calm character.

The incorporation of tree planting is a key element within the streetscape. The trees need to work with the proposed built form and supplementary street furniture elements, such as way finding and sustainable lighting, to create an elegant and peaceful environment where the maximum visual and shade benefits can be obtained.

The community will have access to the water at the Power Station via a series of promenades and public open spaces. Their form will be a combination of decked walkways and main street with commercial and food and beverage uses on the ground floor. The design of the promenades will introduce innovative landscape elements, which reflect the narrative of the place and tell stories of the study area's past and reflect the unique architectural heritage.

A shared surface approach within the main street will prioritise people over vehicle movements, ensuring speeds are kept down and allowing vehicles to be parked in integrated bays. Trees will provide shade and soften the built forms. Tree species will be chosen for their appropriateness for the marine environment and their shade giving qualities.

The streetscapes will be further informed by outcomes of a local Urban Water Management Strategy prepared during the structure planning process. In addition, the Power Station precinct will also have a local public realm design guideline that will complement the wider Cockburn Coast Redevelopment guidelines.

Green Link

There is a network of green links that complement the flavour of the study area and connect the Power Station Master Plan Precinct to the regional bushlands. Connections to the Port Coogee open spaces and links to the south of the Power Station will provide pleasant pedestrian prioritised spaces to pause and move through.

These green links can integrate intimate pocket park spaces, more expansive kick about areas and open spaces, which visibly display the aesthetic of the post industrial vernacular landscape. Paths can combine with structure, art works and seating points to give interest and amenity. The use of reclaimed industrial artefacts and incorporation of interpretative elements, which tell stories relating to the history of Power Station and Cockburn Sound will enrich and provide intellectual inspiration for residents and visitors.

Movement and Access

The Integrated Transport Plan (ITP) prepared by Parsons Brinkerhoff, in support of the DSP2 is the foundation for the response to movement networks within the Power Station Master Plan Precinct. ITP is based on the trend in planning and governance toward stronger integration of transport and land use. The ITP builds on this co-dependency to improve upon conventional practices.
Transport is derived from the need to undertake tasks, such as travelling to employment or education, operating a business, visiting family and friends, and shopping. In turn, land use planning influences where these activities can take place and how they are accessed.

Integration of land use and transport decisions help to provide a positive influence on shaping a place. Successful integration requires a non-mode specific (mode neutral) integration system and strategic planning that cuts across the land use and infrastructure divide, as well as across specific modes of transport infrastructure.

The aim of this integrated approach is to find the most effective way to meet a broad range of community needs and objectives. The ITP for Cockburn Coast reflects the intent of the National Charter of Integrated Land Use and Transport Planning to try and meet these objectives.

The preparation of the Power Station Master Plan will facilitate an efficient transport and land use system by:

_Reducing the need to travel
_Reducing the length of journeys
_Making it safer and easier for people to access services
_Reducing the impact of transport on communities
_Providing a choice of travel modes
_Ensuring flexibility to meet the demands of a changing economy and market environments

The Master Plan has created a safe and accessible movement network supported by the principles of surveillance, visibility and connectivity. The new urban grid established within the Power Station Precinct reflects the grid established across the Cockburn Coast Redevelopment area. This greatly enhances the permeability and legibility of the Precinct. The pedestrian oriented environment is supported by public transport integrated into the design of the Master Plan.

Pedestrian and Cyclist Networks
As stated in the DSP2 a clear hierarchy of pedestrian movement has been developed to ensure safe and direct access for pedestrians. The Master Plan reflects the desire for a shared footpath to the west of the Power Station building, a shared pavement along the main street in the centre of the Precinct and a path to the east along the freight line. In addition, the local road network will be specifically designed to provide a low speed environment that supports pedestrian activity. The DSP2 indicates an at grade crossing over the freight line, based on further liaison with the PTA grade separated access is required over the freight line. The design of the bridge and associated footpaths provides a convenient and safe pedestrian network from public transport nodes into the Power Station structure.

The design of the Master Plan provides recreational and commuter cycle networks. The primary commuter cycle route identified within the DSP2 has been aligned to a generous principal shared path to the east of the Precinct. Recreational cycling is encouraged through the network of local street, public open spaces and along the promenade to the west of the Power Station. End of trip facilities will be distributed across the Precinct to encourage and enhance cycling.

Public Transport
The Master Plan design has responded to the focus on public transport in the DSP2, which indicates that the ITP seeks to:
_Maximise the public transport uplift and enable Rapid Bus Transit and potential conversion to a light rail/streetcar corridor to fully realise the place making benefits
_Put people and place first in a transit oriented development community and elevate the pedestrian and cycling experience
_Define success as trip not taken – create an environment that enables people to live work and play

The Master Plan design has attempted to integrate with the Rapid Bus Transit Corridor and develop opportunities associated with close proximity to transit stops, notwithstanding the barrier that is the freight rail line and the requirement to provide a grade separated access.

The Master Plan will be well placed to take advantage of a fully integrated light rail transit system into the future.

All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Figure 4.9: Master Plan Pedestrian and Cycle Movements.

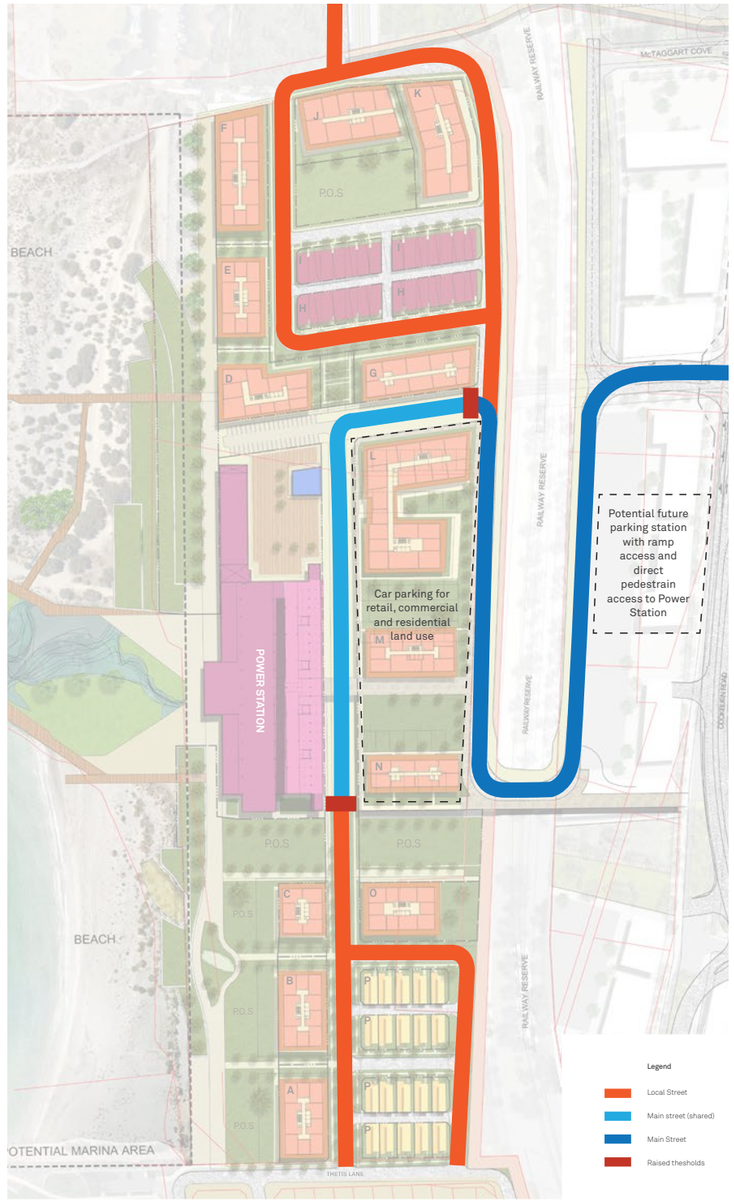


Figure 4.10: Master Plan Vehicle Movements.

Figure 4.11: Master Plan Land Use and Activation Opportunities

All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

LEGEND

Land Use and activation opportunities within the South Fremantle Power Station Master Plan area

Powerstation structure

1. Power Station structure to be re-adapted to provide for a mix of land uses. It will be the key destination within the Power Station Activity Centre.
2. The Turbine Hall is a vast open space designed in a cathedral architectural style. It will be a publically accessible area that can accommodate a diverse number of activities. It includes the Urban Park with retail, commercial and civic land uses.
3. The Boiler House has two structural elements. The first will be converted into an internal street 10m wide allowing the public to move through the Power Station. The second will be converted into apartments.
4. Additional high quality residential apartments will be added to the eastern portion of the Power Station to the height of the orginal chimney stacks, thus reflecting the existing structure and ensuring the Power Station remains the focal point of the Master Plan area.
5. Maximum height of residential development to be less than existing Power Station Structure and the height of the orginal chimney stacks.

Residential development

6. A: Approx. 34 apartments – lifted apartments (4 storeys)
7. B: Approx. 43 apartments – lifted apartments (5 storeys)
8. C: Approx. 22 apartments – lifted apartments (4 storeys)
9. D: Approx. 53 apartments – lifted apartments (5 storeys)
10. E: Approx. 43 apartments – lifted apartments (5 storeys)
11. F: Approx. 58 apartments – lifted apartments (5 storeys)
12. G: Approx. 48 apartments – lifted apartments (5 storeys)
13. H: Approx. 42 apartments – walk-up apartments (3 storeys)
14. I: Approx. 42 apartments – walk-up apartments (3 storeys)
15. J: Approx. 34 apartments – walk-up apartments (4 storeys)
16. K: Approx. 38 apartments – walk-up apartments (4 storeys)
17. L: Approx. 76 apartments – lifted apartments (4 storeys)
18. M: Approx. 53 apartments – lifted apartments (5 storeys)
19. N: Approx. 38 apartments – lifted apartments (5 storeys)
20. O: Approx. 48 apartments – lifted apartments (5 storeys)
21. P: Approx. 20 Single residential lots
22. Power Station: Approx. 147 apartments

Commercial and retail land use

23. Activated Power Station: Approximately 6,970m2 retail / commercial floor space within the Power Station.
24. Activated frontages: Approximately 2,273m2 of retail / commercial at ground floor in development areas L, M and N along the Power Station Main Street.
25. Kiosk / cafe: 250m2 of retail / commercial to north of Power Station, overlooking the Power Station Piazza.

Car Parking

26. East of railway line is car parking for visitors to the Power Station precinct. Visitors are encouraged to conveniently park in the multi-storey car parking facility.
27. Areas L, M and N are located above a two storey podium that contains car parking for the 147 residential dwellings in the Power Station and businesses within the Master Plan area.

Open Space

28. Communal open space will be provided on podium levels for apartment development, as identified in development areas L, M and N. These spaces may include communal gardens.
29. Power Station Piazza located to the north east of the Power Station building will be a focal point for the community to gather. The space can facilitate farmers markets on the weekends; a program of events during the year and cafes, eateries and restaurants.
30. Maritime heritage: The existing ship wrecks to be interpreted in the landscaping, ensuring terraced open space areas do not impact on the wrecks.
31. The area to the west of the Power Station structure will form the basis of a water feature showcasing the function of the cooling ponds and other heritage features, including outdoor pools.
32. Boardwalks will be constructed over the existing groynes to enhance the public enjoyment of the existing cooling ponds and outdoor pools.
33. Beach track to gain easily access the beach.
34. Timber boardwalk beach access along the heritage break water.
35. Grass terraces for picnics and outdoor events.
36. Dunal system and native dunal vegetation.
37. Sea Wall Café/kiosk: Approx: 80m2 of retail floor space with the opportunity to expand to provide for a uniquely located restaurant.
38. Interactive water canal mapping the historic layers of the cooling pond and Ocean bath and swimming pools.
39. The Promenade is the length of the Master Plan area facilitating pedestrian and cycle movements. The Promenade will also provide a space for alfresco areas.
40. Family park with shelters, BBQ and seating
41. An area that cafe development can spill out of the Power Station, complemented by vendors and organised activities.
42. Family beach

Access

43. Bridge – A ramped bridge provides for pedestrian and vehicular access. The bridge has been designed to a 30km/hr speed environment. Currently the Master Plan does not provide for at grade access to the Power Station area from the east.
44. Pedestrian paths connecting the Master Plan to the surrounding areas.
45. Pedestrian bridge connecting multi storey car parking area with the Power Station
46. Rapid Bus Transit (RBT) is located to the east of the railway line at the intersection of the pedestrian bridge and Cockburn Road.

Road Networks

47. Principal Shared Path (approx 7m wide for pavement and landscaping) is aligned along the western boundary of the railway line. It is an at grade continuous link that passes under the bridge.
48. Internal road network provides for 20m wide road reserve between Power Station and development to the east. This will be a pedestrian focused main street styled streetscape.
49. Internal road network provides 16m wide local road reserves including wide pavements throughout the master plan and a footpath on both sides of the street.
50. Internal road network provides 6m wide lane ways to service lots and ensure primary building facade is not dominated by garages.
51. Internal road network provide links to McTaggart Cove and Robb Road to the north.
52. Internal road network provide links to Thetis Lane, Orsino Boulevard and Calledonian Loop to the south.

05 Stakeholder Consultation

Consultation Process

The transformation of the Power Station from its present state to a regional destination will require collaboration and cooperation between key delivery agencies and the support of the community.

The local community and the emerging community are critical to the success of the development of the Power Station Master Plan Precinct.

Landowner Consultation
There has been an extensive community consultation process underpinning the preparation of the DSP and DSP2. Initially, there were community member and landowner meetings with several variations of the plan tested in conjunction with the Cockburn Coast reference group, comprising landowners, residents, community members and Government stakeholders.

In May 2010, a community information session informed landowners and stakeholders of LandCorp's intention to commence the structure planning process. LandCorp then facilitated two workshops to explore master planning options.

The first workshop in September 2010 was used to test two variations of the plan. Following the outcomes of this workshop, a plan was prepared to combine the preferred elements of each of the two options. The plan was presented back to the stakeholders at a second workshop in November 2010. In December 2010, the preferred plan was endorsed by the landowner group.

The community's vision has informed the preparation of the Master Plan.

Membership and Role of Steering Committee
LandCorp has proactively engaged with a number of key agencies to establish the vision for the Power Station and identify the appropriate processes to implement the vision. This process has included regular meetings with the following agencies:
_City of Cockburn
_Department of Planning
_Department of Transport

City of Cockburn Collaboration
The local community and the emerging community are critical to the success of the development of the Power Station Master Plan Precinct. LandCorp has worked closely with the City of Cockburn to ensure there is a local sense of place established as part of the transformation process. The City is a permanent member of the Steering Committee and has been included in monthly meetings.

The Master Plan has been prepared under the guidance of a project working group, comprising representatives from the City of Cockburn. The key recommendations of the project working group are agreed in principal by the City, which is committed to achieving a high quality urban outcome for the Cockburn Coast Redevelopment Project area. This will ensure the Power Station Master Plan Precinct becomes a location of choice for business, services and residents.

Adoption of Council of the Robb Jetty Local Structure Plan and Emplacement Local Structure Plan and associated design guidelines are testimony to the City's dedication to putting in motion the vision for the Cockburn Coast.

State Agency Collaboration
The re-development of Power Station is complex but with the support of government agencies, it will flourish. LandCorp has regularly met with the government agencies to explain the vision, gain guidance and support and proactively address any concerns raised during discussions.

Department of Planning
LandCorp and the Department of Planning have reviewed the land use, zones and reservations within the Precinct within the context of the larger redevelopment area. The Department has initiated amendments to the MRS to establish the appropriate planning framework to progress local planning. The Department of Planning's long term involvement in the project will allow for a seamless and informed decision making process at the structure plan and development application phases of the project.

Transport Agencies
The Department of Transport, the Public Transport Authority and Main Roads WA are all key agencies with key responsibilities in delivering important elements of the Master Plan.

The re-visioned land uses in the once industrial area makes transport, both public and private fundamental to the success of the Master Plan. As a minimum, it will be necessary to ensure that transport decisions do not prejudice the functionality of Cockburn Coast. Ideally, future decisions relating to public transport provision will aid the realisation of the objectives for Cockburn Coast Redevelopment project.

There are a number of transport infrastructure elements to the Master Plan that require agreements. The most critical of these are the location, number and type of railway crossings, and the alignment of Cockburn Coast Drive. Discussions surrounding these matters have commenced with the Master Plan reflecting the decisions having been made to date.

LandCorp has worked closely with the Public Transport Authority and Brookfield on a number of matters relating to the freight line, rail corridor and Robb Road. There has been agreement on the location of the bridge access with agreement that development will not impact on the PTA's Rail Corridor.

Heritage Council of Western Australia
LandCorp has worked very closely with the Heritage Council of Western Australia to ensure the iconic Power Station is appropriately re-adapted securing history for generations to come. LandCorp has regularly presented to the Heritage Council during the design journey. The proposed use of the Power Station for public purposes, commercial and residential is viewed as an excellent way to preserve this beautiful industrial building.

Service Agencies
Assessment of the capacity of existing services and the required upgrades has been undertaken as part of this Master Plan report. Further liaison is required with the relevant service agencies such as Western Power, Water Corporation and Alinta Energy to bring to fruition the identified necessary upgrades, during the local structure planning and development application phase of the project.

It will be important for utility providers to factor in the anticipated additional development into utility services planning for Cockburn Coast. The required regional upgrades will be addressed through the structure planning processes.

Environmental Protection Authority
LandCorp has undertaken a number of studies to inform the design development of the Master Plan, including a desktop environmental assessment and remediation study. The objective is to undertake the appropriate technical studies to inform the Environmental Protection Authority and work closely with them to ensure detailed matters associated with development are addressed at the appropriate point in the planning process.

Note: In respect to stages 5 and 6, under 126(3) of the Planning and Development Act the local authority has the option of requesting the WAPC concurrently rezone Town Planning Scheme No. 3 to the Development zone.

Figure 5.1: Planning Processes

06 Heritage

South Fremantle Power Station Building and heritage elements

The Cockburn Coast Cultural Heritage Strategy (2012) [11] prepared in support of DSP2 emphasises the importance of heritage in the Cockburn Coast Redevelopment Project area. It recognises the importance of the distinctive heritage of the area as a significant component of the urban renaissance of Cockburn Coast. The local heritage is integral to creating a distinct and meaningful sense of place.

While the distinctive form, height and architectural design of the Power Station provides a focus for development opportunities, there are a number of challenges in realising the full potential of the Master Plan Precinct. There are a number of historic, aboriginal and maritime sites that must be treated sensitively.

The Heritage Strategy identifies the following strategies to enhance the existing sense of place and heritage:

South Fremantle Power Station
_Retain, conserve and adapt the South Fremantle Power Station for new uses.
_Any future conservation, management and/or adaptation works to the South Fremantle Power Station are to be undertaken in accordance with State and local policies and procedures.
_Maintain the visual setting of, and interrelationship between, the significant contributory elements of the South Fremantle Power Station.
_Ensure all opportunities to generate awareness and public interest in the building are capitalised upon.
_Acknowledge the significance of high quality urban art, which has been informally applied on the walls of the Power Station since its closure.
_Integrate interpretation of the site in the Cockburn Coast project to communicate the tangible and intangible values and history of the place to the community.

The Diana and James Shipwrecks
_Retain in situ and do not disturb.
_Any future conservation, management and/ or adaptation works to the place are to be undertaken in accordance with commonwealth and State legislation, policies and procedures.
_Integrate interpretation of the site in the Cockburn Coast project to communicate the tangible and intangible values and history of the wreck to the community.

Indian Ocean Site
_Integrate interpretation of the mythological story of the site into the Cockburn Coast project to communicate the tangible and intangible values of the site.
_Should any development be proposed in Owen Anchorage, conduct a maritime survey. [11]

The Master Plan Precinct is located within the Cockburn Coast and is part of a rich historical past and present. Preserving the many Cockburn Coast heritage stories within the Power Station will allow the development to have its own unique identity.

The Power Station is the most visible heritage place in the Precinct. It is one of few, post war twentieth century power stations constructed adjacent to water. It stands above the rest, most notably for its position near the ocean, the cathedral like style, and the elegant verticality of the facades. It provides a significant opportunity for high quality adaptive re-use in the context of a vibrant residential development area.

Many power stations have been adapted nationally and internationally. Examples include the Tate Modern (London), Brisbane Powerhouse, Sydney Powerhouse Museum and Caixa Forum (Madrid). The Master Plan provides a similar vision for the South Fremantle Power Station.

Figure 6.1: Places of Heritage Significance within the Cockburn Coast District Structure Plan (2009) Source: TPG
Note: Precinct boundaries are as per the 2009 Cockburn Coast District Structure Plan, boundaries have been subsequently realigned through the local structure planning processes.

[11] TPG Town Planning Urban Design and Heritage, 2012, Cockburn Coast Cultural Heritage Strategy

Power Station Building

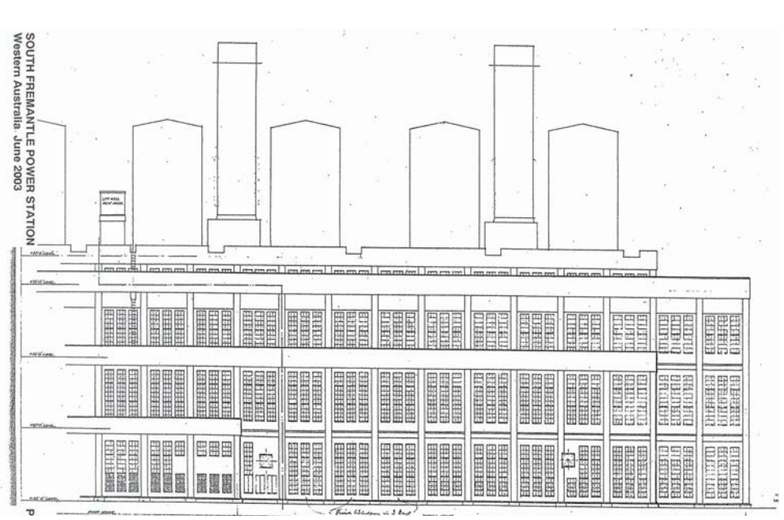
Constructed in two stages, between 1947 and 1951, the South Fremantle Power Station housed the first major power generating equipment in the State. Decommissioned in 1985, striped of most of the equipment, the site has been vacant since. Since decommissioning, the Power Station's structural components have fallen into varying levels of dilapidation, with structural defects of varying severity throughout.

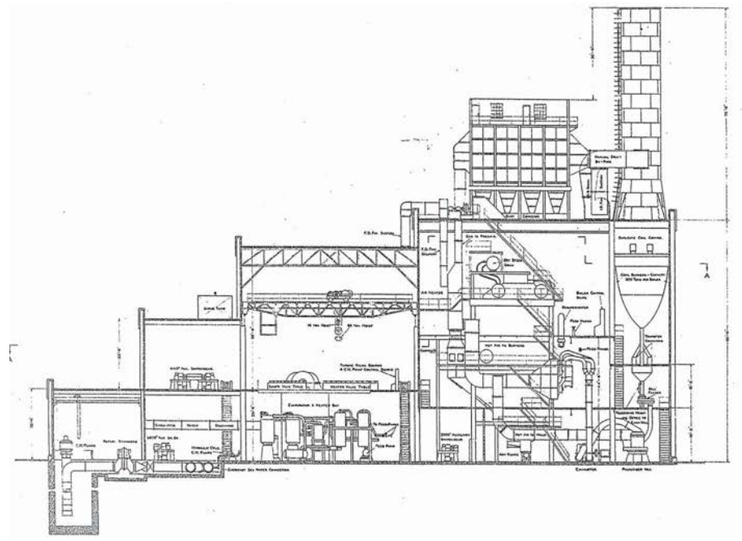
The Power Station is divided into several areas, each of which relates to the original operational function. The largest area is the Boiler House, situated along the eastern edge of the Power Station and the Turbine Hall on the western side of the building. The administrative block and transformer room is located to the north.

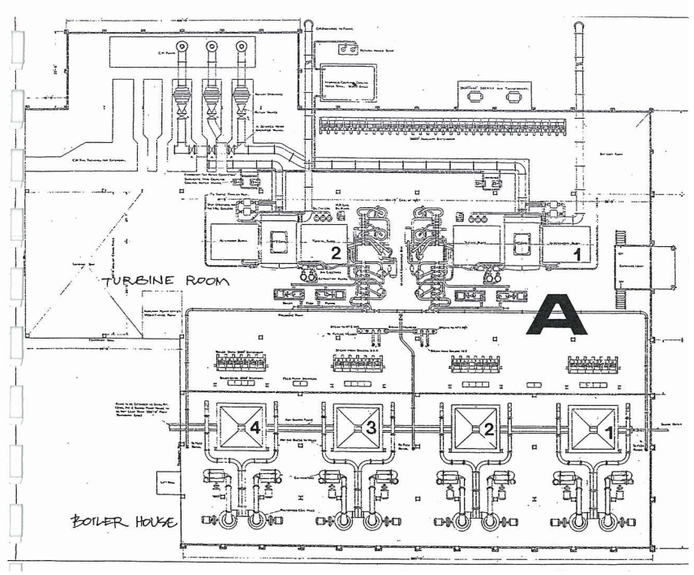
The Power Station is a steel-framed structure comprising of a regular grid of steel columns supporting steel roof trusses (in the Turbine Hall) and steel roof beams (in the Boiler House). Steel frames are generally arranged on a 5 to 6 metre grid. A full height concrete wall full separates the Boiler House from the Turbine Hall.

The reinforced concrete roof slab spans between steel trusses in the Turbine Hall and between steel beams in the Boiler House. Within the Boiler House and Turbine Hall, there are several reinforced concrete mezzanine floors supported on steel beams, which span between internal steel columns.

The external façade consists of concrete-encased steel columns, longitudinal concrete-encased steel beams and concrete upstand walls which extend along the entire length of the façade. Windows occur above all upstand walls. [12]







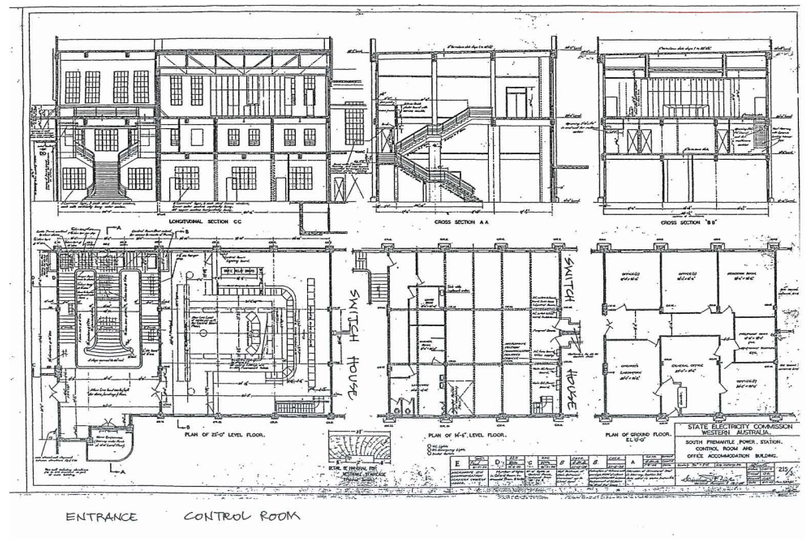


Figure 6.2: South Fremantle Power Station Historic Plans. Source: Ronald Bodycoat

[12] Wood and Grieve Engineers, 2011, South Fremantle Power Station Structural Inspection Report

07 Planning Context

The following details the current planning context for the redevelopment of planning context for the development and adaptive reuse of the Power Station.

Metropolitan Region Scheme
In August 2009, the Metropolitan Region Planning Committee (MRPC) acting under delegated authority from the WAPC resolved to proceed with Amendment 1180/41 to the MRS. The amendment rezones the North Coogee Industrial area to an Urban zone, and to rationalise and realign the Parks and Recreation and Primary Regional proposes roads reservations to reflect the strategic planning intent and land use planning proposals within DSP.

The Amendment proposed the following changes to the MRS:
_Rezone approximately 91.55ha of Industrial zone land to the Urban zone
_Minor rationalisation of Parks and Recreation reservation to the west of the Primary Regional Roads reservation and within the coastal Parks and Recreation reserve to the Urban Deferred zone, totalling 5.15ha
_Realignment and rationalisation of Primary Regional Road reservations between Rockingham Road and the Fremantle Port freight rail line
_Rezoning of part of the South Fremantle Power Station Site to Urban Deferred

Currently, the MRS identifies Lot 2 and a portion of Lot 3 Robb Road, North Coogee as Urban Deferred. Specifically, the WAPC requested a number of requirements be met before lifting the Urban Deferred status across the Precinct, including the preparation of a Master Plan for Lots 2, 3 and 2167 Robb Road, North Coogee. The requirements related to heritage, environmental, land use and economic considerations.

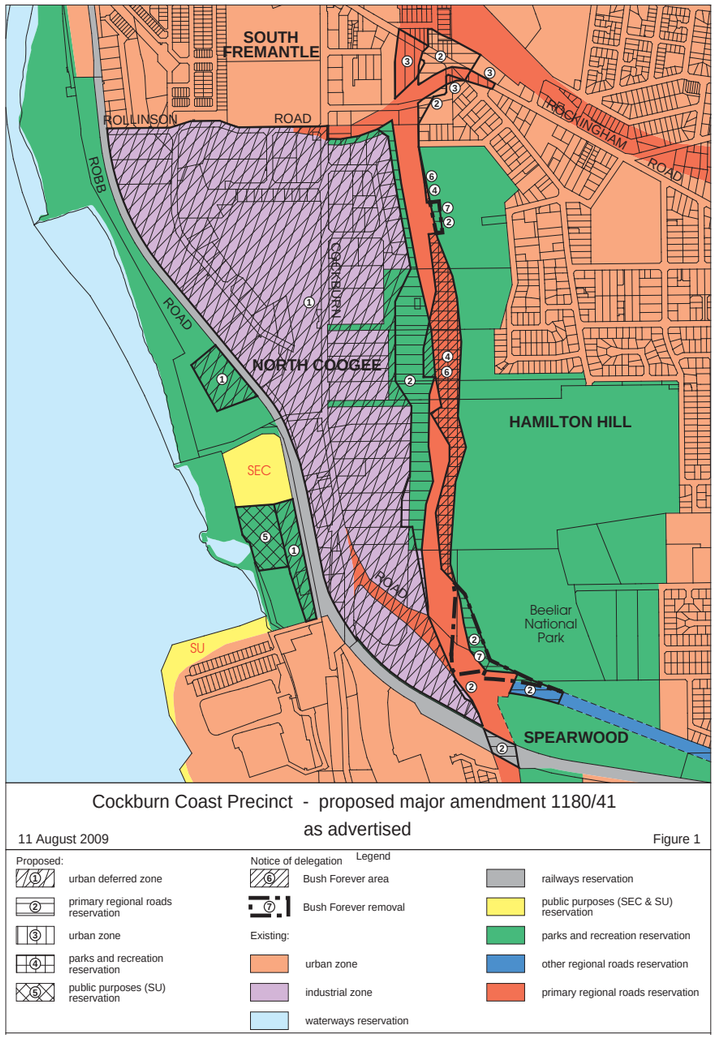


Figure 7.1: Amendment 1180/41 to the Metropolitan Region Scheme as advertised 11 August 2009

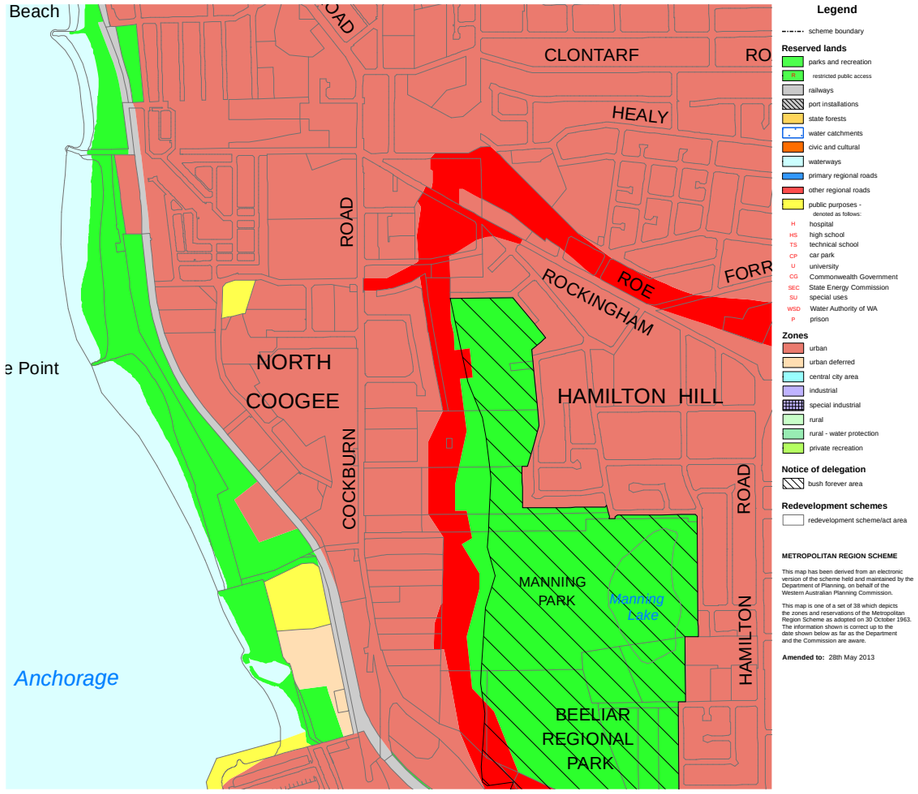


Figure 7.2: Current Metropolitan Region Scheme

07 Planning Context

Town Planning Scheme

The City of Cockburn Town Planning Scheme No. 3 (TPS3) identifies most of the study area as not zoned within the local scheme. A portion of Lot 3 within the study area is reserved for 'Parks and Recreation'. Lot 1, which is currently the switchyard site, is reserved for 'public purpose'.

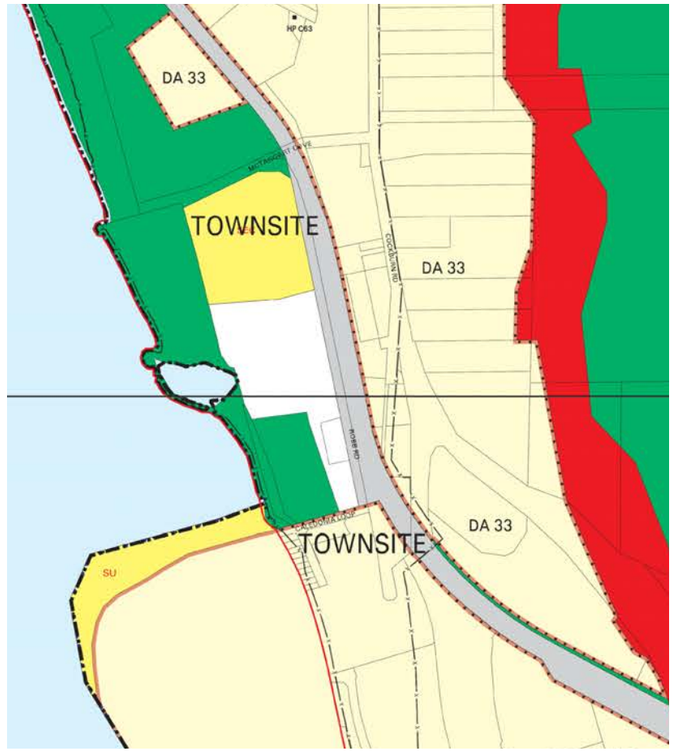


Figure 7.3: Current City of Cockburn Town Planning Scheme No.3.

Directions 2031 and Beyond and The Outer Metropolitan Sub Regional Strategy
As identified by Directions 2031 and Beyond, the south west subregion encompasses the Cities of Cockburn, Kwinana and Rockingham. These areas have experienced considerable economic and population growth with Directions 2031 identifying and capitalising on this trend. As a planned urban growth area the Cockburn Coast is recognised by these documents as new ocean side community with an estimated population of 10,800.

Directions 2031 establishes a hierarchy of activity centres to provide an equitable distribution of jobs, services and amenity. The Power Station is located in Cockburn Coast within the south west sub region of the Perth metropolitan area. Directions 2031 anticipates that the south west sub regional will accommodate an additional 70,000 people, 41 000 dwellings, 47,000 workforce and 41,000 jobs by 2031. While the expansion of employment in Rockingham, development of Latitude 32 industrial area and continued development of Cockburn Central provide the greatest contribution the South West sub region employment targets, the geographical location of Cockburn Coast offers the opportunity for employment across the strategic categories including export and oriented employment, knowledge based industry, and higher order population driven employment. The redevelopment of the Power Station will play a key role in the success in achieving employment targets.

Cockburn Coast District Structure Plan
The DSP was endorsed in September 2009 and sets out to provide a statutory and land use framework intended to inform future detailed planning and the preparation of local structure plans. The vision for the Cockburn Coast is:

"To create a vibrant, landmark destination that is connected, integrated, diverse and accessible." [13]

This District Structure Plan has been prepared by the WAPC in conjunction with the City of Cockburn, City of Fremantle, LandCorp and a stakeholder reference group. During this process, consideration was given to:
_responding to the regional context
_establishing a robust framework for the delivery of sustainability objectives
_transitioning arrangements for existing industrial operations
_developing a plan to deliver an intensive mixed use development

Cockburn Coast District Structure Plan 2
The Cockburn Coast District Structure Plan Part 2 (DSP2) builds on DSP and serves as a key guiding document, which builds upon the core principles of the DSP and enables greater certainty going forward into the local planning phase.

The DSP2 identifies a number of key drivers and opportunities that underpin its vision and intent, in turn forming the foundation of the Robb Street Jetty Local Structure Plan.

[13] TBB, 2008, Cockburn Coast District Structure Plan

These include:
_Create a sub regional economy
_Develop and integrated transport plan
_Embed green infrastructure into the development
_Create key physical links which bring people to the coast
_Maximise the coastal, cultural and regional amenity

The DSP2 identifies three logical, distinct and separate local structure plan areas within the larger Cockburn Coast area. These are:
_Robb Jetty
_Emplacement
_Power Station

The Power Station Local Structure Plan area is identified as providing one of two activity centres within the project area. It is envisaged that the Power Station Master Plan area will be the primary employment hub for the Cockburn Coast, while the Robb Jetty centre will focus on the provision of daily shopping needs for residents. These locations have been strategically planned to coincide with the proposed rapid transit lines and station locations.

The DSP2 sets density and yield targets, height projections, as well as identifying the provision and location of key public open space areas. It should be noted, that these targets are generated by the larger DSP2 project area, of which the Power Station Precinct forms only part.

City of Cockburn Local Commercial and Activity Centres Strategy
The City of Cockburn's Local Commercial and Activity Centres Strategy 2012 (LCACS) assists in implementing the planning of activity centres envisaged in the WAPC's Directions 2031 and beyond: Metropolitan planning beyond the horizon, and State Planning Policy No. 4.2 – Activity Centres for Perth and Peel.

The LCACS has been prepared based on the following principles:
_Principle 1 - Efficient, Intense and Compact Centres
_Principle 2 - Optimise Frequency, Concentration and Quality of Transactions
_Principle 3 - Support Maturation of Centres
_Principle 4 - Support Integrity of the Network of Activity Centres
_Principle 5 - Optimise Access To and Within Centres
_Principle 6 - Match Use with Purpose of Place
_Principle 7 - Place Identity, Amenity and Integrity
_Principle 8 - Place Equity
_Principle 9 - Coherent, Logical and Legible Places

The LCACS identifies a Cockburn Coast District Centre within the region that will generally allow for development to produce 10,000m^2 of shop floor space by 2016, and 22,000m^{2}of shop floor space by 2021.

07 Planning Context

Building Typology	Indicative Density	Dwelling Yield	% Component
High Rise	R160	1,300	25.0%
Medium Rise	R120	602	11.6%
Low Rise	R80	1,641	31.6%
Terrace	R40	57	1.1%
Mixed Use	R100	585	11.3%
Activity Centre	R160	1,008	19.4%
TOTAL	-	5,193	100%

Table 1: Residential density targets within DSP2

State Planning Policy No. 1 - State Planning Framework
This policy sets out the key principals relating to environment, economy, community, infrastructure and regional development to guide the way future development and decisions occur. The Cockburn Coast project specifically addresses all criteria listed above and the relevant State Planning Policies listed below, creating the potential for a sustainable urban development in this unique metropolitan location.

State Planning Policy 2.6 - Coastal Planning Policy
State Planning Policy 2.6 (SPP2.6) is particularly relevant to the Cockburn Coast project, in that it:
_Sets requirements for calculating coastal physical process setbacks to project development and land use from physical coastal processes and the effects of climate change
_Provides guidance relating to development and land use along the beach

The Master Plan has responded the coastal physical setbacks as set by SPP2.6 and provides response in the form of development setback from the coast.

State Planning Policy No. 3 - Urban Growth and Settlement
State Planning Policy 3 (SPP3) sets out the principles and considerations which apply to planning for urban growth and settlement in Western Australia. It is a broad sector policy under Statement of Planning Policy No.1: State Planning Framework and is implemented by more detailed policies on particular matters relating to planning for urban settlements that require additional guidance.

State Planning Policy 4.2 - Activity Centres for Peel and Perth
The preparation of the Master Plan has been guided by State Planning Policy 4.2 (SPP4.2) in particular the identification of the emerging Cockburn Coast centre identified in and around the Power Station and Robb Jetty centre. The main purpose of SPP4.2 is to specify broad planning requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel. It is mainly concerned with the distribution, function, broad land use and urban design criteria of activity centres, and with coordinating their land use and infrastructure planning.

State Planning Policy 5.4 - Road and Rail Transport Noise and Freight considerations in Land Use Planning
Given the location of the freight rail line to the eastern boundary of the Master Plan area the provisions contained within State Planning Policy 5.4 are particularly relevant to the development of the Precinct. This policy aims to promote a system in which sustainable land use and transport are mutually compatible. Through specifically addressing noise attenuation matters in design and the interface between land uses the relevant Power Station Local Structure Plan will provide development provisions in keeping with the requirements and principles of SPP5.4.

Improvement Plan 33
Improvement Plan 33 (IP33) was prepared for the Cockburn Coast project area under the provisions of Part 8 of the Planning and Development Act 2005 and gazetted in June 2006. [14]

The purpose of IP33 was to prevent inappropriate development within Cockburn Coast whilst the DSP was being prepared and subject to additional appropriate statutory and governance arrangements being put in place.

IP33 recognises that Cockburn Coast has been identified for future urban development, moving away from its historical industrial use, and also recognises that Cockburn Coast is subject to intense development pressure. Therefore, IP33 provides the mechanism to 'halt' inappropriate development until such time that a robust statutory and governance framework has been implemented to guide future development. IP33 also enables the WAPC to acquire land by agreement or compulsorily for future redevelopment, if necessary.

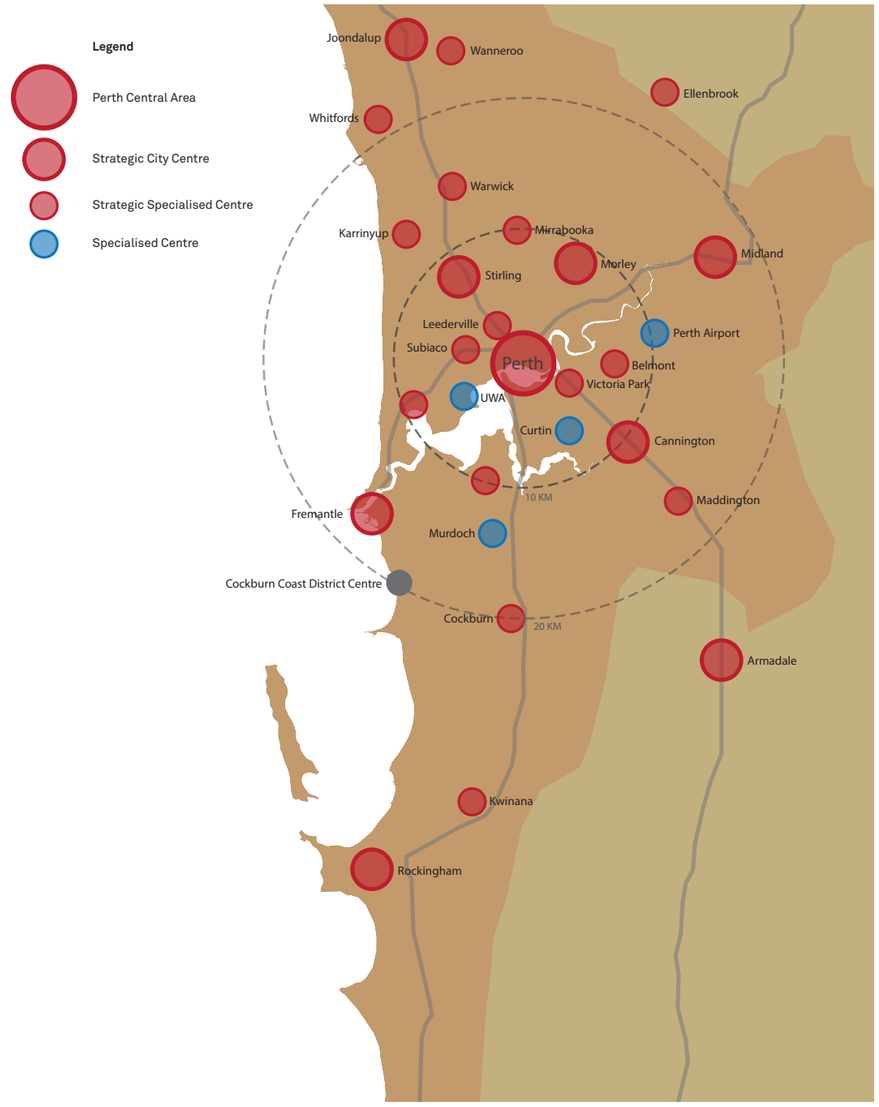
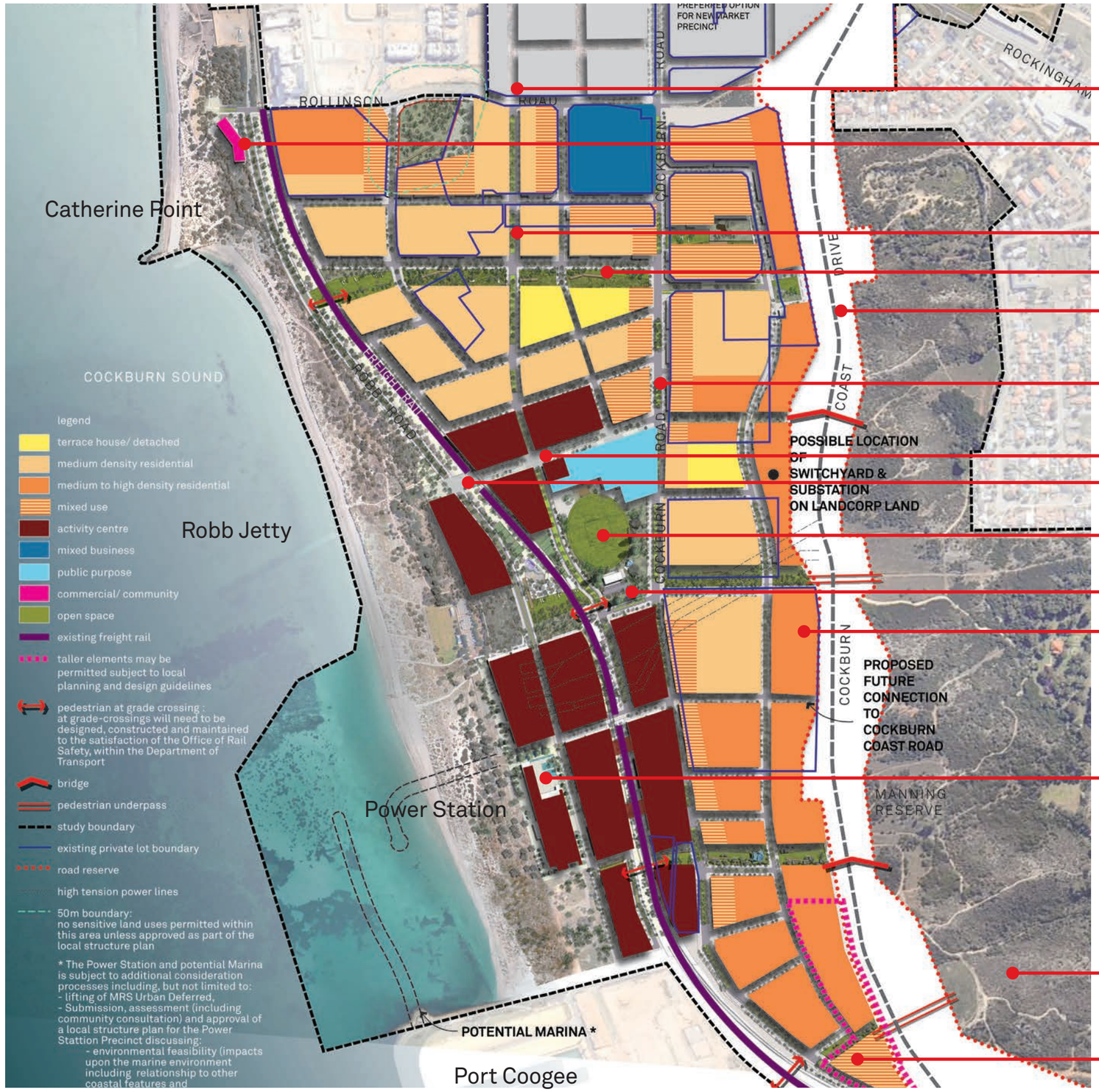


Figure 7.4: South Fremantle Power Station located in the Cockburn Coast District Centre in the State Planning Policy 4.2 Activity Centres for Perth and Peel.

[14] TBB, 2008, Cockburn Coast District Structure Plan

District Structure Plan Part 2 (2011)



Future transit route and connection to South Fremantle

Catherine Point Reserve future cafe and recreation hub

Primary north-south local and distributor road

Landscape ecological corridor

Future Cockburn Coast Drive Reserve

Cockburn Road landscape boulevard

Robb Jetty 'main street' local centre

Robb Jetty beach front urban plaza

Future 'urban' primary school and playing field

Parkland Corridor

Ridgeline development

Power station commercial, hospitality and tourism centre

Beeliar Regional Park bushland

Gateway development sites

Figure 7.5: District Structure Plan Part 2, approved 2011

Metropolitan Region Scheme Amendment 1180/41

As outlined previously, Metropolitan Region Scheme amendment 1180/41 resolved to rezone the larger Cockburn Coast redevelopment area to 'Urban'. As part of this process, the South Fremantle Power Station was identified as presenting a range of unique characteristics that would require further consideration prior to being rezoned to 'Urban'. As such, as part of the amendment the subject area was rezoned to 'Urban Deferred'. It was identified that for the Urban Deferred status to be lifted, a detailed Master Plan, separate from the local structure plan required for the broader Power Station Precinct, would be required for Lots 2, 3, and 2167 Robb Road. The Master Plan must demonstrate consideration of the following;

_Land ownership details
_Heritage assessment and demonstration of adaptive reuse of the South Fremantle Power Station
_Consideration of the appropriate use of the abutting foreshore area
_Consideration of how the Master Plan site would respond to the possible relocation of the switchyard
_Environmental assessment
_Coastal processes assessment
_Infrastructure and servicing, including coastal infrastructure
_Land use and density
_Economic impact and commercial assessment
_Built form and landscape design
_Detailed transport and parking analysis; and
_Implementation options, including collaboration, staging, planning obligations and incentives

This report sets out to demonstrate consideration of those elements based on the current planning framework and negotiations with stakeholders.

Land ownership details
The WAPC specifically requested a Master Plan for Lots 2, 3 and 2167 Robb Road, North Coogee. As development at these lots is influenced by surrounding development, freight line alignment, access to Cockburn Road and location of public transport the Master Plan Precinct also provides guidance for a larger area. The boundary of the Master Plan Precinct is McTaggart Cove to the north, Thetis Lane to the south, the Bus Rapid Transit corridor to the east (including the access to Cockburn Road) and foreshore to the west.

The Master Plan therefore comprises Lots 1, 2, 3 and 2167 Robb Road, North Coogee, and McTaggart Cove and Robb Road reserve. Ownership details provided within Table 2.

Lot	Plan/ Diagram	Volume	Folio	Area (m²)	Owner	Current MRS Reserve / Zone	Proposed MRS 1180/41 Amendment Reserve / Zone
1	17373	1878	135	40,318	Electricity Networks Corporation #	Public Purpose Reserve – SEC	Public Purpose Reserve – SEC
2	17373	1878	136	2,764	Electricity Generation Corporation ##	Urban Deferred	Urban Zone
3	17373	1878	137	60,102	Electricity Generation Corporation ##	Urban Deferred and Parks and Recreation Reserve	Urban Zone and Parks and Recreation Reserve
2161	35641	LR3130	821	50,000	State of WA ###	Parks and Recreation Reserve	Parks and Recreation Reserve
2167	37890	LR3131	896	3,247	State of WA ####	Parks and Recreation Reserve	Parks and Recreation Reserve

Table 2: Summary of Certificates of Title within the Power Station Master Plan Precinct

Trading as Western Power
Trading as Synergy
Status Order/Interest: Leasehold - Primary Interest Holder Synergy, a successor entity of The State Electricity Commission of Western Australia
Reserve under management Order - Primary Interest Holder City of Cockburn

A complete copy of the Certificates of Title can be found at Appendix A

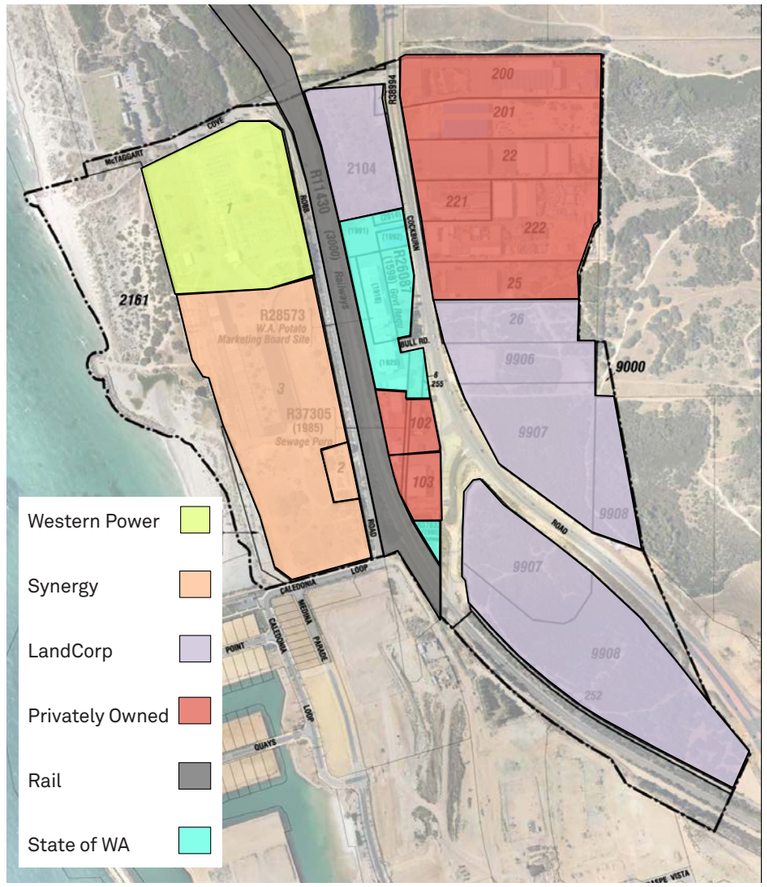


Figure 8.1: Land Ownership.

Heritage assessment and demonstration of adaptive reuse of the South Fremantle Power Station

The heritage values of the Precinct have been central to the design process, and adopted as a key urban design principle when conceiving the Master Plan. LandCorp has commissioned a structural review of the Power Station structure, gained guidance from heritage experts and liaised extensively with the Heritage Council of Western Australia during the preparation of the Master Plan.

Structural Review

The South Fremantle Power Station Structural Inspection Report (2011)[15] , provides a visual assessment of the structural elements and a summary of the site and laboratory material testing undertaken, to understand the structural integrity of the existing structure. Despite the aggressive site environment, the outcomes indicated that the structural components that make up the Power Station are sound and defects are commensurate with the age of the structure. The report indicates that large areas of the existing structure are deemed suitable for adaptive re-use, subject to localised strengthening. The existing mezzanine floor beams are also capable of accommodating residential and retail loading enabling the adaptive re-use vision within the Master Plan to be achieved.

A complete copy of the Structural Inspection Report can be found at Appendix B.

Heritage Review

The South Fremantle Power Station Masterplan Technical Heritage Study (2014)[16] identifies the heritage places within the Master Plan Precinct. It also looks at both the proposed development surrounding the Power Station, and the future adaption of the Power Station building itself. A review of the Precinct presented to the Heritage Council of Western Australia identified the benefits of the proposed design. [17]

With regard to the Power Station building the Master Plan proposes the following:

_Retention and conservation of the built fabric, including those elements identified as being of 'considerable significance' in the Conservation Plan
_Maintenance of the large open 'cathedral like' space of the Turbine Hall
_Utilisation of the western portions of the Power Station buildings for commercial and community uses, as well as internal open space and thoroughfare
_Construction of apartments within and above the eastern portion of the Power Station building (the Boiler House)
_Interpretation of the former smoke stacks (no longer extant) with the development of apartments above the Boiler House

With regard to the area surrounding the Power Station building, the Master Plan generally proposes:

_Conservation and restoration of the groynes, with safe access permitted via a boardwalk above the groynes, and a jetty extending into the ocean
_Interpretation of the cooling pond with a water feature (detailed design to be confirmed at future planning stages)
_Retention of the James and Diana Shipwrecks beneath public open space
_Utilisation of the area northeast of the Power Station building for a public square/plaza
_Development of a series of residential and mixed use buildings to the north, south and east of the Power Station building, ranging in height between 2 and 6 storeys
_Provision of a range of public open space areas, disbursed throughout the precinct
_A u-shaped bridge to providing pedestrian and vehicular access across the freight rail line

Heritage Outcomes

The proposed Master Plan has been assessed against the Conservation Plan Statement of Significance and Conservation Policy, State Planning Policy 3.5 – Historic Heritage Conservation (SPP3.5), the heritage requirements in the DSP and the principles of the ICOMOS Burra Charter.

Power Station Building

The South Fremantle Power Station is recognised as an important place of cultural heritage significance. It is also recognised as a critical component of the Cockburn Coast project as the landmark feature of the redevelopment area and as a regionally significant coastal node for Perth's southern suburbs. The Mast Plan represents a commitment to the retention, conservation and adaptive reuse of the building.

Specifically, the potential impacts of the Master Plan on the Power Station building include:

Conservation Plan

The proposal has sought to retain the existing fabric and also those elements identified as of Considerable Significance in the Conservation Plan, including:

_The steel-framed and concrete clad form and fabric of the main Power Station building formerly housing the Boiler Room and Turbine Hall, the wing extending from the north of the main building (constructed for the Entrance Hall, Laboratories, Control Centre, Administration offices and Switch House)
_Retention and refurbishment of all glazed walling
_Retention of steel framing internally
_The overhead crane in the Turbine Hall and all associated support framing and plant
_The staircase and balustrade in the Entrance Hall to the Administration Wing.

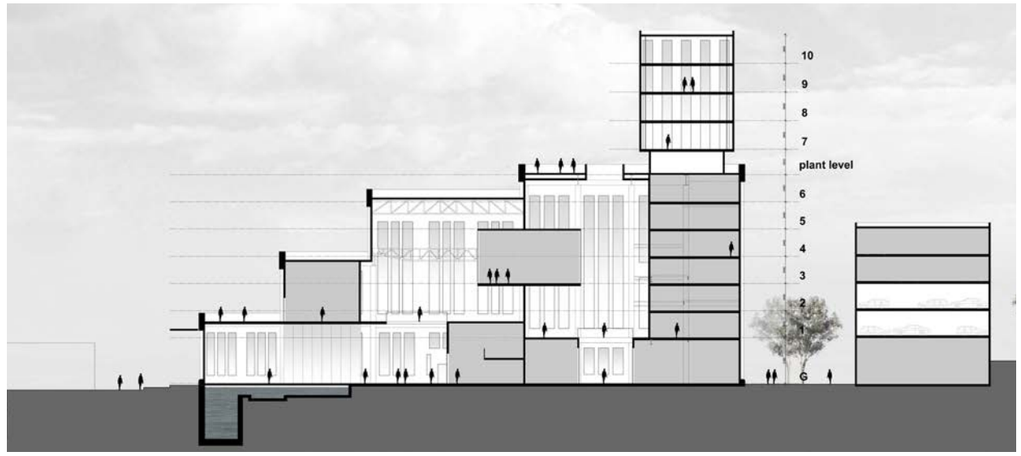


Figure 8.2: South Fremantle Power Station Elevation demonstrating mixed use potential of structure.

Figure 8.3: Photomontage of potential residential use of the Power Station structure.

[15] Wood and Grieve Engineers, 2011, South Fremantle Power Station Structural Inspection Report

[16] TPG Town Planning Urban Design and Heritage, 2014, South Fremantle Power Station Master Plan Technical Heritage Study

[17] TPG Town Planning Urban Design and Heritage, 2013, South Fremantle Power Station Master Plan, TPG Heritage Summary Report November 2013, Tabled at the Heritage Council of Western Australia December 2013 Meeting

Burra Charter
The Burra Charter states that the conservation of a place should take into consideration all aspects of cultural significance without unwarranted emphasis on any one value at the expense of others (Article 5.1). Since its closure, urban art has been informally applied onto the walls of the Power Station. This art demonstrates that a period of abandonment and neglect has been a significant part of the history and evolution of the building over the past 25 years. Retention of the building will enable opportunities to retain some of the high quality urban art.

New Development
After the closure of the Power Station four smoke stacks, which had been visually prominent elements above the roof-line of the building were removed. It is proposed that these smoke stacks be interpreted through new development. Interpretation of these stacks will provide an understanding of the sheer size and scale of the Power Station when it was functioning.

New Uses
SPP3.5 recognises that the adaptation of buildings for new uses will often require imagination and flexibility and is often the key to the conservation of heritage places that no longer serve their original function. Given the large scale of the building, a variety of new uses have been proposed, which will seek to ensure the place is continued to be used and maintained, including:
_Introduction of both public uses and residential development to activate the building
_Enabling a variety of temporary changing uses to utilise the Turbine Hall space
_Internal spaces and uses will maintain vistas through the building
_Enabling year-round activation through internal spaces protected from the weather

Power Station Setting
The South Fremantle Power Station remains as a prominent element on the shoreline in the coastal sand dunes south of Fremantle; it will be clearly visible from the north and south for some distance along the coast and from Owen Anchorage seawards. Policy 3 of the Conservation Plan states that the landmark values of the building should be preserved and not obscured. The Master Plan has been designed to accord with Policy 3, as outlined below:
_No new development has been positioned west of the Power Station building enabling clear sight-lines to the building from the foreshore/ coast and Owen Anchorage
_The lower scale of the proposed 2 - 6 floor development positioned to the north, south and east of the Power Station will assist in retaining the physical dominance and landmark qualities of the existing building. The new buildings will sit below the height of the Power Station, which has a height equivalent of an 8 storey building
_Leveraging off the uniqueness of the Power Station, these new buildings will assist in creating a coastal residential, visitor and tourist node unlike any other in Perth as envisaged in the District Structure Plan (Part 1)
_All new development is setback and will not be an appendage to the Power Station building to support a focus on the iconic structure and maintain its prominence in the proposed urban landscape
_As required by the DSP, the proposed new buildings will respect the planar cubic form of the Power Station building and will be sympathetic to its aesthetic qualities
_A jetty, which is proposed to extend from the timber boardwalk, will provide increased opportunities to view the Power Station from Owen Anchorage
_The public open space link in front of the Power Station facilitates continuity of views and public access to the Power Station
_An open thoroughfare on the eastern side of the Power Station building has been retained, as recommended in the Conservation Plan, enabling future interpretation of the Coal Storage Area

Cooling Pond
The distinctive cooling pond, constructed behind stone groynes, on the western side of the Power Station, utilised seawater for use in the boilers and for cooling the turbines. The Conservation Plan identifies the two groynes and the water basin on as items of 'Considerable Significance' and advocates their conservation.
The Master Plan seeks to retain and interpret these elements by:
_Constructing a timber boardwalk on top of the existing groyne structures (provided they are structurally stable)
_Installing an interactive water canal mapping the historic layers of the cooling pond
_The interpretation of these elements will ensure an appropriate context for the Power Station is maintained and to assist in an understanding of how the place operated.

Shipwrecks
The Diana and James wreck sites are located south west of the Power Station. Leaving the wrecks beneath the public opens space will ensure that they are not further degraded or intruded on by footings of any new buildings, and can be excavated in the future if necessary. The shipwrecks will be interpreted in the public open space.

The DSP envisages that the Master Plan Precinct will be rejuvenated as an activity node, forming the hub of the new community and a regional attractor. Our research has identified that the significance of the Power Station – the attributes that make the place unique and special – is encapsulated not just in its built form, but also in the voluminous spaces within, the setting around and the story that is told collectively by these elements.

The Master Plan is seen as a positive step forward in the process toward realising the potential of the South Fremantle Power Station, and celebrating its heritage significance as the centrepiece of the broader Cockburn Coast Redevelopment project.

A complete copy of the Technical Heritage Study can be found at Appendix C.

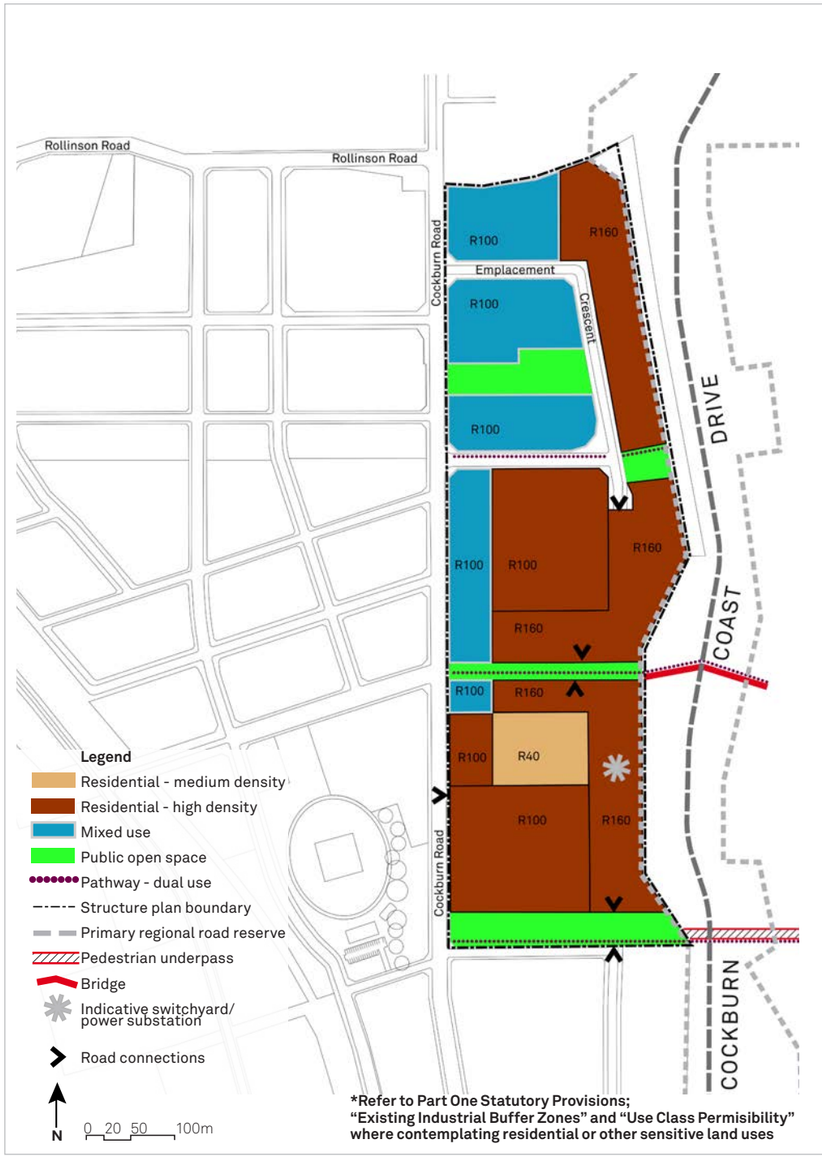


Figure 8.4: Emplacement Local Structure Plan

Consideration of the appropriate use of the abutting foreshore area
The Power Station is a highly visible, elegant and dramatic building on the Cockburn Coast, importantly its prominence has been preserved through the design of the Master Plan. No freehold development will be forward of the western façade of the Power Station, this will ensure it remains the primary architectural feature in the Precinct. Only small-scale development to the west of the Power Station associated with recreational facilities such as seating, shade and small scale kiosk/restaurant will be allowed. The development of the foreshore will be an important public asset and provide a perfect opportunity to enjoy the grandeur of the Power Station.

Foreshore Management Plan
The Foreshore Management Plan (2013)[18] prepared for the Cockburn Coast Redevelopment project has informed the preparation of the Master Plan. The foreshore report addresses the full extent of the Cockburn Coast Redevelopment area in accordance with State and local government guidelines. Consultation with the City of Cockburn and the Department of Planning has informed the design of the foreshore. LandCorp has also engaged with the community to determine the vision for the Cockburn Coast, with place making being identifies as an important aspect in creating a socially inclusive environment.

The Foreshore Management Plan has been guided by the vision for the Cockburn Coast, while ensuring the development planned for the Cockburn Coast responds sensitively to the marine and terrestrial environmental conditions of this section of coast. The rich cultural history of the foreshore provides this study area with unique opportunities for enrichment of the foreshore experience.

The key considerations and provisions addressed in the Foreshore Management Plan include; existing environmental conditions, management plans for weeds, pest fauna, fire and rehabilitation, along with a landscape and infrastructure plan.

Comprehensive modelling of mitigation options for coastal erosion and consideration of the proposed access, transportation and development planning outlined in the DSP2, has also informed the development of the foreshore concept.

The overall concept is sufficiently robust to adapt to a range of coastal protection solutions. Key features of the Foreshore Management Plan include:
_Two major activity nodes associated with commercial and /or residential development along the foreshore, these being Robb Jetty and Power Station nodes. The character and function of both 'major' and 'minor' activity nodes have been based on previous work in the DSP2 and the Place Making Strategy and more recently influenced by constraints highlighted by the Coastal Vulnerability Assessment.
_Three minor activity nodes based at Catherine Point, McTaggart Cove and at the 'Green Corridor' connection, that provide recreational facilities but without direct interface with significant built development.
_A movement network hierarchy that builds on the existing north-south running shared path, to provide a range of movement options and experiences for pedestrians and cyclists as well as accommodating horses access to the beach.
_A foredune boardwalk between Robb Jetty and the Power Station offers uninterrupted view of the beach and ocean along with opportunities for education and interpretive elements.
_Retention of some of the unsealed beach access paths in less intensively used zones. Vegetation protection fencing would be maintained and if necessary upgraded adjacent to these pathways.
_Provision of facilities and infrastructure including toilets, beach showers, shelters, BBQ facilities, seating, fish cleaning tables, interpretive signage and artworks, and areas of irrigated lawn to provide 'kick about' spaces and picnic areas.
_Carparks are to be retained at Catherine Point and McTaggart Cove, with the McTaggart Cove parking area relocated closer to Robb Road following development of the Power Station Precinct. The existing carpark at Robb Jetty will be lost as part of a proposed development study area. The car parking provision for the study area has been developed as part of the Local Transport and Traffic Management Strategy.[19]

The Master Plan identifies that the foreshore will include:
_Immediately to the west of the Power Station structure, a Promenade that is the length of the Master Plan Precinct to facilitate access to the beach
_Appropriately scaled trees and vegetation west of the Power Station to provide shelter but not impact on the prominence of the Power Station structure
_Urban space at the entrance of the Power Station, integrating retail, food and beverage and entertainment facilities within the Power Station and the pedestrian Promenade
_Re-interpretation of the cooling pond west of the Power Station structure to reflect the history of the place and include potential public pools
_Quiet, shaded natural public open space including the reinterpretation of the buried shipwreck assets to the south of the Power Station
_Access to the beach and dune system while protecting the delicate ecosystem the full length of the Precinct
_Decked walkways with stepped and ramped changes of level linking the Power Station to the foreshore
_BBQ facilities, art elements, showers and drinking fountains to enhance the beach experience and provide a safe family beach environment
_New groynes as new departure point for active recreation such as sea kayaking, diving tours or swimming.

Specifically for the Power Station Master Plan Precinct, the Foreshore Management Plan indicates that detailed design of the foreshore will be progressed in accordance with the Power Station Local Structure Plan process. A detailed local Foreshore Management Plan, prepared in collaboration with the relevant authorities, will address the following key considerations:
_Erosion and coastal protection
_Access and circulations
_Infrastructure and facilities
_Artworks, signage and education
_Landscape finishes and materials
_Sustainable lighting strategy
_Rehabilitation, re-vegetation and planning
_Weed management
_Fire management
_Monitoring and implementation
_Management

Power Station Promenade and Boardwalks.

[18] HASSELL, 2012, Cockburn Coast Foreshore Management Plan

[19] Parsons Brinckerhoff, 2013, Cockburn Coast Local transport and Traffic Management Strategy

Consideration of how the master plan site would respond to the possible relocation of the switchyard

To facilitate the vision for the Power Station Precinct the relocation of the switchyard is critical. The current location of the switchyard, directly north of the Power Station, would adversely affect the sustainable use of the Power Station structure as a key destination for the region.

Impact on Power Network
LandCorp facilitated a whole of government approach to address the possible relocation of the switchyard. The relocation of an important piece of infrastructure such as this involves collaboration with multiple agencies, extensive planning and an appropriate design response.

To establish an appropriate governance process and joined up government approach, a special working group comprised of Western Power, Department of Planning and LandCorp was formed. Its objective was to investigate the design and location options associated with the switchyard. The group considered the future network, the age of the infrastructure and the likely replacement costs. After consideration, the special working group identified an appropriate location for a new South Fremantle Terminal external to the Master Plan Precinct. The facility will be a 'Gas Insulated System' that will be largely housed within a building and located on State Government owned land. Further detailed work is required to inform the design of the final facility. More details relating to timing are provided within the Implementation section of this report.

Impact on design
The switchyard site takes up a considerable portion of the Master Plan, at some 40,318m^2, is it nearly 40 percent of the Precinct. It is located directly north of the key destination of the Precinct. The location impacts on access to the Power Station and the ability to provide a sustainable levels of development.

In response to the possible relocation of the switchyard the Master Plan details the potential for a mix of land uses at the site, with a focus on residential development. The development of the area will ensure there is a sustainable catchment within a walkable catchment of an activity centre and public transport options.

Environmental Assessment
LandCorp has undertaken studies to clearly understand the existing natural landscape and the any remediation requirements associated with the use of the Power Station building and associated cooling pond and groyne.

Flora and Fauna
A desktop flora and fauna assessment for the land surrounding the South Fremantle Power Station was undertaken in 2013[20]. It identified that the study area is highly disturbed, containing large patches of cleared land. Vegetation types likely to be present within the study area were extrapolated from vegetation mapping conducted previously within parts of the study area and nearby.

Three ecological studies have been conducted in the South Fremantle (Cockburn) Foreshore area to support various planning activities. Two studies were conducted to support the Cockburn Coast District Structure Plan; a Vegetation Spring Survey and Level 2 Fauna Survey of the Cockburn Coast and surrounding areas conducted by GHD in 2009 (GHD 2009), and a vegetation desktop study conducted by ENV in 2007 (ENV 2007). Most recently, Ecological Australia conducted a ground-truthing survey of the Cockburn Foreshore area (immediately to the north of the study area) and prepared a summary of environmental values of the foreshore for inclusion in the Cockburn Coast Foreshore Management Plan (HASSELL 2012). These reports have been used to describe, and further extrapolate, the vegetation types and condition of the study area.

The historical clearing and activity associated with construction and operation of the Power Station have left the study area highly disturbed with little remaining native vegetation and widespread introduced flora species. In combination with its small size, the study area offers no substantial habitat for conservation significant flora species or conservation significant fauna species, with one potential exception.

It is recommended that an on-ground assessment of the study area for the DPaW Priority 3 species Lerista lineata (Perth Slider, Lined Skink) be conducted at the local structure plan stage, as it has been known to occur in disturbed areas and has been recorded nearby.
A complete copy of the Flora and Fauna Assessment can be found at Appendix D.

Remediation
A significant number of environmental investigations and remediation processes have been carried out at the former South Fremantle Power Station structure between 2001 and 2014 [21] . The intent of the works was to identify the potential impacts to soil, groundwater, the cooling pond and seawater within the study area and mitigate or manage these impacts.

After a qualitative risk assessment was undertaken, the following should be considered at the appropriate points in the development process:
- If site redevelopment consists of removing buildings and infrastructure, then remediation of hydrocarbons and metals identified in the soil, by excavation and disposal may, be required. It is possible that other contaminants may be present under site infrastructure.
- Whilst PCBs were not identified in the soil, cooling pond water or groundwater, limited data exists. Additional investigations may be required to verify the existing data set and manage the public perceptions of PCBs at the site.
- The site will require classification by DEC under the Contaminated Sites Act 2003. This classification will have a direct bearing upon the proposed development options and processes for the site.

It is likely that a contaminated sites auditor will be appointed to review the environmental investigations and remediation of the site. The auditor may require additional investigations to be conducted at the site, based on the classification from DEC.

A qualitative risk assessment identified that most of the remaining impacts are considered relatively low in respect to the potentials risk to human and environment receptors and site redevelopment.

Coastal processes assessment
A comprehensive Costal Vulnerability assessment has been undertaken in 2013 and updated in 2014[22] to inform the design of the Cockburn Coast Redevelopment area and the Power Station Master Plan.

The natural coastal processes have been interrupted for about half a century by the groynes at Island Street, Catherine Point, Robb Road and the South Fremantle Power Station. At the date of construction walls were included to protect the development. Since then there has been significant accretion of the coast due to the various coastal structures. The sea walls both north and south of the cooling water pond area have been covered by sand accumulation.

In 2006, the main breakwaters at Port Coogee were constructed and these also change the coastal processes. The developer of Port Coogee is responsible for ongoing beach monitoring and management to mitigate the impacts of the development on coastal processes. The management has included bypassing sand from the northern side of Port Coogee to the beaches of the south. Since Port Coogee breakwaters were constructed bypassing has been carried out once in 2009 when approximately 15,000m^3 was bypassed, a further bypass occurred in 2012.

In developing scenarios for improvements for the Power Station Master Plan Precinct it has been noted that the proposal will need to comply with the requirements of the Statement of Planning Policy 2.6 – State Coastal Planning Policy (SPP2.6). SPP2.6 outlines that the setback to development from the coastline should take into account "coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria". As such, to determine the appropriate setback due to the action of physical coastal processes a setback assessment completed is mandatory. The Master Plan has proposed development that is behind the highly conservative Coastal Processes Setback line measurement.

A complete copy of the Cockburn Coast Costal Vulnerability report can be found at Appendix E.

[20] Ecological, 2013, South Fremantle Power Station Site, Desktop Flora and Fauna Assessment

[21] Parsons Brinkerhoff, 2014, Data Gap Analysis South Fremantle Power Station, North Coogee, WA

[22] MP Rogers and Associates, 2014, Cockburn Coast Costal Vulnerability to 2013 SCPP

Infrastructure and servicing, including coastal infrastructure

An Infrastructure Servicing Report (2013)[23] identifies that the Master Plan Precinct can be effectively and efficiently serviced. The Precinct is well serviced by existing infrastructure and/or upgrade and extension of infrastructure adjacent the study area.

On development some of the existing infrastructure will require upgrading, relocation or extension to service new subdivisional cadastral boundaries. Liaison with relevant statutory service authorities and project stakeholders is recommended to achieve timely provision of adequate service infrastructure, which will be facilitated through the preparation of the Power Station Local Structure Plan process.

Servicing

Geotechnical

It is anticipated that the study area is predominantly sandy/limestone. Techniques used to achieve acceptable foundation strengths may include in-situ earthworks and compaction, together with associated testing.

Formal assessment of subsurface geotechnical nature of the study area will be required to guide the ultimate earthworks design and feasibility of the project, which is expected to occur at the development application stage.

Earthworks

Onsite cut to fill and importation of sandy fill will be required to create generally flat lots that provide adequate clearance to stormwater drainage systems and overland stormwater flood routing in accordance with City of Cockburn requirements.

Existing levels across the study area produce a height differential of up to 7m in some areas. Retaining structures along lot boundaries may be required for ultimate development to produce level pads.

Waste water and Effluent Disposal

Wastewater Infrastructure Upgrades

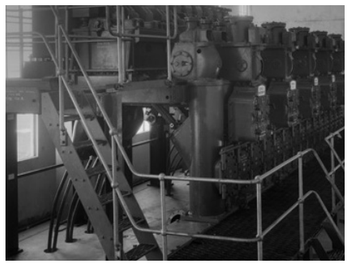
Wastewater servicing to the South Fremantle Power Station Master Plan Precinct can be achieved through extension of existing gravity reticulation sewers.

Future development of land parcels between existing railway line and Cockburn Road may require a developer funded relocation of the existing DN480 steel main into Cockburn Road.

Gravity Sewer Relocation

Water Corporation sewer planning indicates that the study area may be served by extension of the sewer system from the Port Coogee development to the south. A DN225 gravity reticulation sewer extending north from Caledonia Loop through to McTaggart Cove will provide serviceability across the development study area.

[23] Wood and Grieve Engineers, 2014, Infrastructure Servicing Report South Fremantle Power Station Master Plan Area Cockburn Coast



Earthworks/ Geotechnical

It is anticipated that the site is of a predominant sandy/limestone nature. It is therefore considered reasonable for foundation outside of the Power Station to achieve acceptable levels. Techniques used to achieve acceptable foundation strength will likely include, but are not limited to, in situ earthworks and compaction, together with associated testing.

Sewer Reticulation

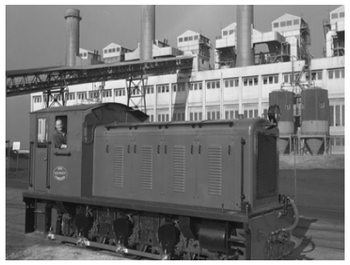
The South Fremantle Power Station site is currently not served with reticulated sewer connection. Water Corporation strategic sewer planning indicates that the site may be served by extension of the sewer system for the Port Coogee area. On development of the area it would be required to extend water supply infrastructure southward along Robb Road to fully serve the area.

Water Supply

The site is currently served with a potable water supply connection. A 150mm dia potable water main exists in McTaggart Cove. On development of the area, it will be necessary to extend water supply infrastructure southward along Robb Road to ensure complete service of the area.

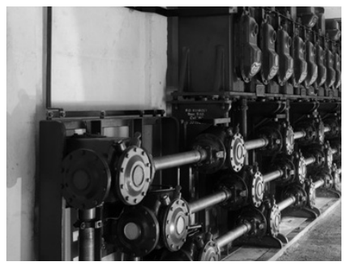
Drainage

The area is underlayed with highly permeable sandy soils, rendering good opportunities to provide for drainage by on site infiltration. This approach supports the best of Water Sensitive Urban Design principles and the local area water management plan.



Roadways

The existing site is served by McTaggart Cove and Robb Road roadways. Upon development these fully constructed and sealed roads may be required to be rebuilt, or upgraded to fully support the approved development plan.



Power

Currently there is no supply to the site to enable residential or commercial development of the site. Previous advice from Western Power indicates that the overall Cockburn Coast development can be supplied over time; although it is likely some upgrade of the feeders in the area will be required.

Gas Supply

An existing high pressure gas main currently exists within Cockburn Road. Supply to the South Fremantle Power Station Site can be provided via an extension of the gas main from Cockburn Road down McTaggart Cove and Robb Road.

Telecommunications

Telstra mains exist in adjacent areas. It is likely that development of the area will yield >100 dwelling units, as such telecommunications infrastructure would be provided through the newer created NBN Co Ltd.

Water

Water Supply Reticulation

Potable water servicing within the Master Plan Precinct can be achieved using a conventional piped network reticulation system. A potable water main exists in McTaggart Cove to the north and Caledonia Loop to the south. On development of the area, it will be necessary to extend this water supply infrastructure to facilitate development.

Water Supply Planning

To ensure the Power Station Master Plan and the Cockburn Coast Redevelopment area is able to be serviced in the long term a number of regional infrastructure upgrades are required. A Western Power review of the water infrastructure for the Hamilton Hill Gravity Supply Scheme indicates the following new infrastructure is required:

- 760mm DN375 distribution main from Bellion Drive and
- 1,430m DN500 distribution main from the existing Forrest Road DN610

The progress and intensity of new development will form part of the trigger for when the new infrastructure will be required.

Ground Water Pipeline

A subsurface groundwater pipeline exists within Robb Road, originating from the Port Coogee development to the south. The purpose of the pipeline is to extract groundwater from Port Coogee and inject at various borehole locations within Robb Road to the north of the Master Plan Precinct. During the local structure planning, subdivision and development application phases the management and/or protection of this asset will potentially be required.

Drainage

The area is underlayed with highly permeable sandy soils, rendering good opportunities to provide for drainage by on site infiltration. Storm events larger than 10 year ARI will be attenuated in pit, pipe infrastructure in road reserves and regional infiltration areas.

This approach supports the best of Water Sensitive Urban Design principles and the local area water management plan.

Roadways

There are a number of existing and proposed roads within the Power Station Master Plan.

- Internal Roads - Vehicular access to the Power Station Master Plan Precinct will be from McTaggart Cove to the north, Caledonia Loop to the south, and Cockburn Road to the east. A traffic bridge has been proposed over the existing freight rail line, linking South Fremantle Power Station Precinct with the Cockburn Road intersection. Internal pavement design profiles and carriageway widths will be in general accord with City of Cockburn design requirements.
- Cockburn Road - It is a likely requirement that Cockburn Road will be upgraded as part of the development of the Cockburn Coast Redevelopment project area.

The extent of upgrade of Cockburn Road will depend on the final configuration of the integrated transportation plan, existing road user requirements and City of Cockburn requirements. Upgrading of Cockburn Road may also include the relocation of multiple existing services within the existing and/or future reserve boundaries.

It is envisaged that there will be further transportation studies to inform future road widths for Cockburn Road during the local structure planning process. During this process consideration must also be given to the existing services within the road reserve, with the intent of minimizing service relocations.

Power

Power Supply Upgrade

Currently there is no supply to the study area that will enable residential or commercial development. The initial stages of development can be serviced by an extension of the existing services within Cockburn Road, where the service remains during the relocation of the South Fremantle substation. As development progresses the existing services within Cockburn Road will be insufficient.

Previous advice from Western Power indicates that the overall Cockburn Coast development can be supplied over time; although it is likely some upgrade of the feeders, substations in the area will be required.

Due to the dynamic nature of Western Power's network, infrastructure capacity and connection points, a review of the power supply will be required during the local structure planning and subdivision processes.

Transmission Line Relocation

Within the Master Plan Precinct, a section of existing aerial power transmission lines run from the Terminal Substation area southward along Robb Road. As part of the overall development it is proposed to relocate the zone substation currently adjacent to the old South Fremantle Power Station to an area on the eastern side of Cockburn Road.

This will therefore underground a portion of the transmission lines. The overhead aerials running within Cockburn Road are proposed to remain.

Relocation of the Substation

The relocation of the existing South Fremantle Terminal Substation Switchyard to a location north east of the current Master Plan Precinct will be required to facilitate the Power Station Master Plan vision. The processes undertaken to determine the relocation of the Terminal Substation Switchyard are detailed within the Implementation section of this report.

Gas Supply

An existing high pressure gas main currently exists within Cockburn Road. Supply to the South Fremantle Power Station Master Plan Precinct can be provided via an extension of the gas main from Cockburn Road down McTaggart Cove and Robb Road.

Telecommunications

Telstra mains exist in adjacent areas and servicing of the Master Plan Precinct can be facilities through the extension of existing services. It is likely that development of the area will yield >100 dwelling units, as such telecommunications infrastructure would be provided through the newer created National Broadband Network Co Ltd.

A complete copy of the Infrastructure Servicing Report can be found at Appendix F.

Coastal Infrastructure
The Coastal Vulnerability Assessment (2014)[24] and Cockburn Coast – Foreshore Management Plan Coastal Vulnerability Assessment and Adaption (2014)[25] have helped informed the development of the Master Plan.

The assessment of an appropriate setback for new freehold development at the Power Station Master Plan Precinct has been made in accordance with the recommendations and intent of State Planning Policy 2.6 – State Coastal Planning Policy (2013) (SPP2.6). The assessment identifies setback distances that account for coastal erosion processes, including climate change; and minimum Finished Floor Level to account for coastal flooding and climate change.

The assessment indicates that the natural coastal processes have been affected by numerous works along the coast. These include the dredging of shipping channels through Success and Parmelia Banks in the 1940s, and industrial developments on the shores of Owen Anchorage. The longshore transport regime has been interrupted and modified for about half a century by the groynes at Island Street, Catherine Point, Robb Road and the South Fremantle Power Station.

The construction of the South Fremantle Power Station included seawalls to protect the significant development. Over time, the seawalls both north and south of the Power Station cooling water pond area have been covered by sand accumulation. Significant accretion of the shoreline has occurred with the beach prograding about 120m near the Power Station since the 1940s.

The assessment identifies the likely position of the shoreline in 2030, 2070 and 2110, with the following different intervention options in place:
_Large scale beach nourishment
_Seawall
_Groyne, initial beach nourishment and ongoing backpassing
_Headland, initial beach nourishment and ongoing backpassing

In all scenarios the Power Station structure is protected and freehold land is located to the east of the coastal processes setback line.

Specifically, the existing seawalls surrounding the Power Station cooling water pond will be upgraded as part of the proposed development. All freehold development will be at least 50m behind these upgraded seawalls, south of the Power Station.

The buffer of 50 m behind the upgraded seawalls is generous, should it be required, further technical studies could be completed to examine the suitability of a smaller buffer behind the upgraded seawalls.

In addition, if a marina was progressed a further review and update of the coastal processes and Foreshore Management Plan would be required.

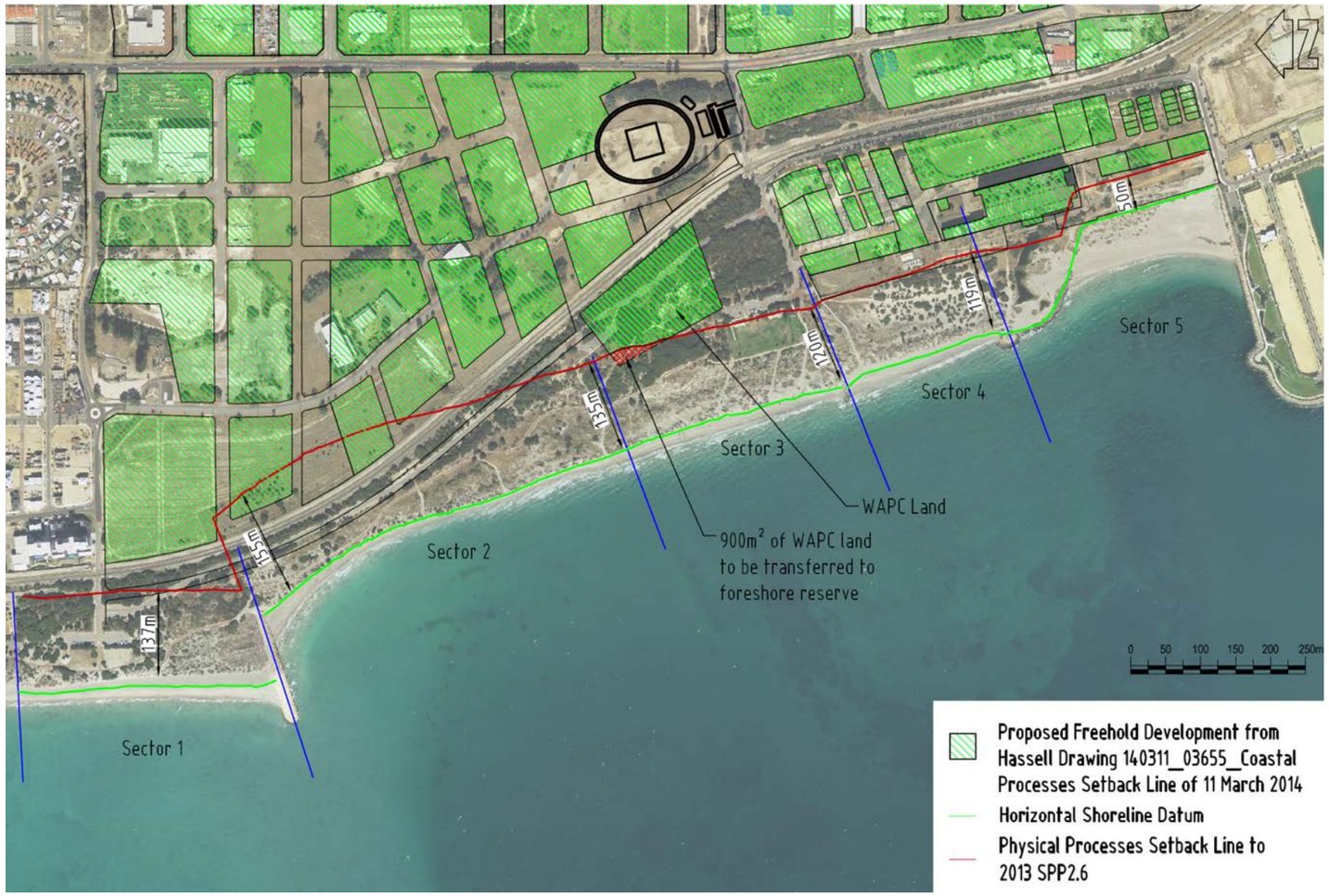


Figure 8.5: Physical Processes Setback Line to 2013 SPP2.6

The Foreshore Management Plan for the Cockburn Coast provides suitable foreshore amenities and access to the beaches throughout the planning period to 2110. The risk of future coastal erosion has been evaluated and fully avoided as required by the SPP2.6.

[24] MP Rogers and Associates, 2014, Cockburn Coast Costal Vulnerability to 2013 SCPP

[25] MP Rogers and Associates, 2014, Cockburn Coast – Foreshore Management Plan Costal Vulnerability Assessment and Adaptation

08 Metropolitan Region Scheme

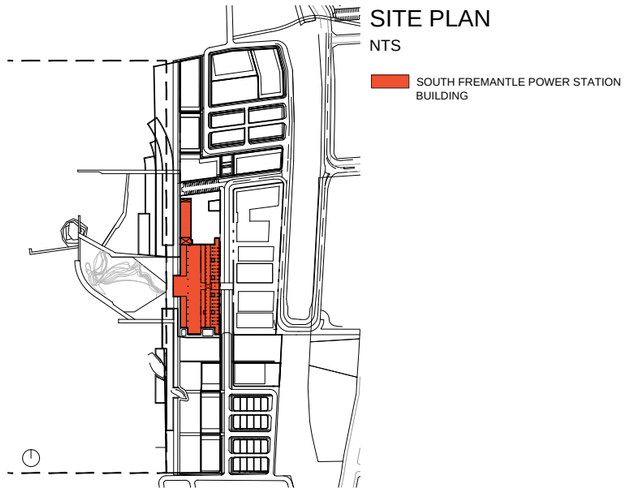
Land use and density
In accordance with the vision articulated within the WAPC's DSP2, the Power Station Master Plan facilitates the centre ultimately becoming the ultimate employment hub for Cockburn Coast. It will be an important commercial, recreation and prime visitor destination. These uses will complement the local retailing and small scale commercial opportunities that will be provided within the Robb Jetty Main Street.

Specifically, the Master Plan is designed to be flexible, robust and responsive to the different demands over the life of the centre. The Master Plan provides for a scale of land use that is based on the current policy requirements and liaison with relevant stakeholders. The following strategic decisions have influenced the potential densities and land uses within the Precinct:
_Grade separated access across the freight rail line
_Use of Cockburn Road as the primary movement network, reducing the reliance on the possible Cockburn Coast Drive
_Accessibility to a Rapid Bus Transit corridor
_Coastal processes setback requirements

The Master Plan establishes a mixed use development vision and demonstrates the Power Station building and surrounding development can accommodate approximately:
_5,765m² of retail and commercial floorspace within the Power Station, distributed across the ground, first and second floors
_2,273m² of retail and commercial floorspace within the Power Station Main Street, providing retail at the ground floor and commercial on the first floor
_160m² of restaurant / kiosk distributed within the foreshore area and to the north of the Precinct
_High density residential development through the provision of 839 dwellings, inclusive of three, two and one bedroom apartments, single residential lots and walk up apartments, including some 147 dwellings above the Power Station structure providing high quality views across the Indian Ocean to Rottnest and Garden Island
_Extensive areas of local and regional open space, approximately 31,380m² of local public open space and some 54,278m² of foreshore reserve, distributed across the Precinct
_Large areas of the Power Station structure will be set aside for public purposes to enable community events and exhibitions to take place
_Two Bus Rapid Transit Stations will be located on the eastern boundary of the Master Plan Precinct
_Car parking is provided in a multi-storey development sleeved beneath residential development to the east of the Power Station
_Provision for a multi-storey car parking facility to the east of the freight rail line that will accommodate visitor parking as the Power Station Master Plan Precinct evolves into a regional destination

The indicative land uses proposed within the Power Station reflect the opportunity for the adaptation of the building to be a catalyst for development and activation of the wider precinct.
_The mix of retail and commercial uses on the ground, first and second floor will activate the large open spaces within the Power Station building

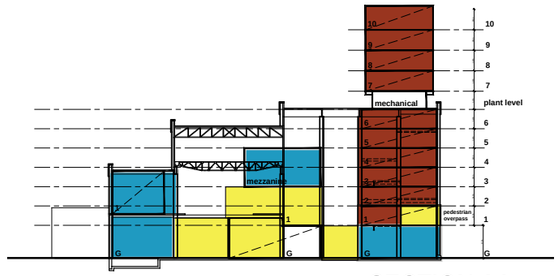
Figure 8.6: Power Station Master Plan, Land Use Plan.



SITE PLAN

NTS

SOUTH FREMANTLE POWER STATION BUILDING



SECTION AA

PROPOSED

LEGEND: Land Uses within Power Station Building

MIXED USE

APPROX: 3471m² Retail, including food and beverage

APPROX: 3499m² Commercial

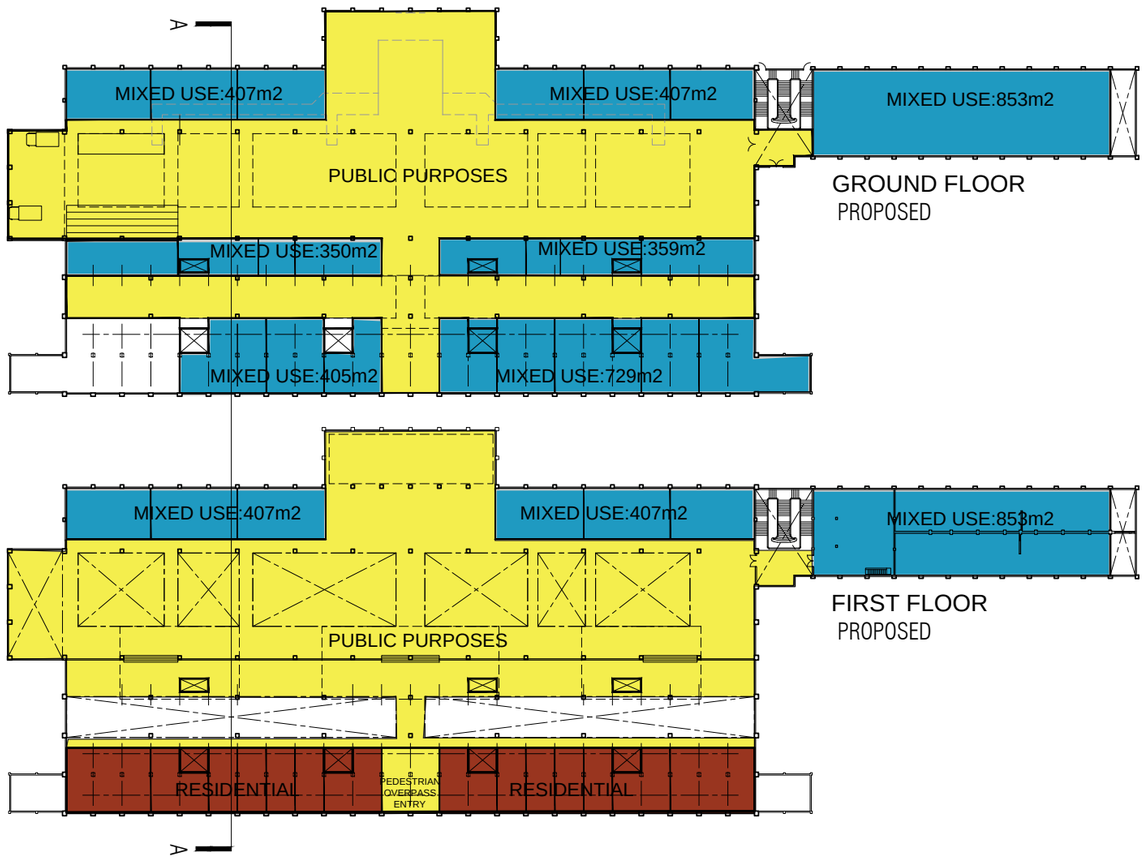
RESIDENTIAL

Approx: 147 Apartments

PUBLIC PURPOSE

Open areas throughout the Power Station building will be used for community purposes

*Note: Land uses are subject to refinement in accordance with more detailed planning processes

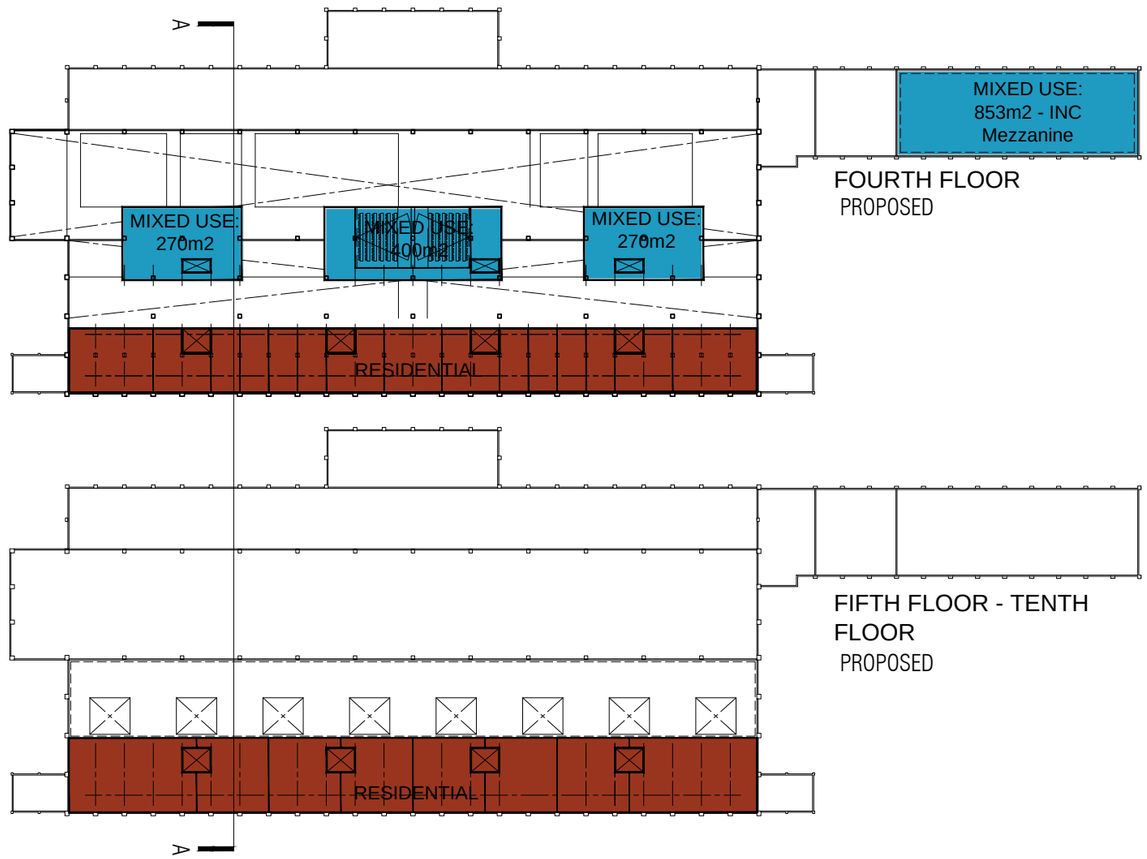


GROUND FLOOR

PROPOSED

FIRST FLOOR

PROPOSED



FOURTH FLOOR

PROPOSED

FIFTH FLOOR - TENTH FLOOR

PROPOSED

Figure 8.7: Power Station Summary Development Plan.

and support the Power Station to be a key destination for the Cockburn Coast project area
_Public purpose or civic land uses on the ground and first floor provide an opportunity for community based events and exhibition areas. The land use also facilitates a link between public transport options and the Power Station Foreshore
_The opportunity for residential land use above the Boiler House will ensure a sufficient community to activate the Power Station building

The Master Plan proposes a moderate increase in residential development within the Precinct compared to that contemplated in the DSP2. This increase is based on more detailed understanding of the capacity of the site to sustain development in close proximity to public transport and high amenity areas. It also reflects the opportunity to investigate the development potential in the Power Station building.

The final land use, scale and density provisions will be determined through comprehensive local structure planning taking into account the adopted Robb Jetty and Emplacement Local Structure Plans and development application processes.

Economic impact and commercial assessment
An economic assessment[26] of the Master Plan Precinct demonstrates that the Master Plan is in accordance with the Economic Development Strategy[27] for Cockburn Coast and supports the viability of the broader Cockburn Coast Redevelopment project.

The economic assessment of the Master Plan Precinct needs to be considered in the greater project context. It draws upon a comprehensive planning and development framework for Cockburn Coast including the DSP, DSP2 and the Cockburn Coast Economic and Employment Strategy.

Floor space demand
The future demand for floor space across Cockburn Coast was calculated by modelling the expenditure pools of local users and applying productivity targets for different floor space types. The findings suggest that retail floor space demand for Cockburn Coast Redevelopment project area will be approximately 15,800m².

Drawing from this result, the floor space demand for the Power Station Master Plan Precinct was then estimated to be 7,300m², representing approximately 46% of the total retail floor space in Cockburn Coast.

The Power Station Master Plan Precinct will therefore contribute significantly to Cockburn Coast floor space demand catering mostly for the comparison (e.g. clothing) and entertainment (e.g. restaurants) floor space.

Employment
The DSP and DSP 2 have produced a range of employment target based on differing assumptions with the DSP being considered an optimal development outcome, and the DSP 2 target being considered a minimal achievement. The DSP sets an employment target of 4,080 whereas the DSP 2 targets a total employment outcome of 2,750 jobs.

Based on an employment analysis, it was found that the Power Station Precinct could support approximately 820 centre-based jobs. This would account for approximately 30% of the total centralised employment target for the Cockburn Coast development (2,750 jobs).

The importance of the Power Station Precinct cannot be overstated if Cockburn Coast is to achieve the employment targets set by DSP2 or even DSP. The Master Plan proposes approximately 6,672m² of retail floorspace, supported by further commercial land uses in and around the Power Station.

A comprehensive structure planning process that takes into account the whole of the Cockburn Coast will provide the statutory planning provisions associated with land use in the Precinct.

Economic activation
Economic activation is defined as the frequency and concentration of social and economic transactions carried out by the diverse user groups of a place. A successful place must provide for users needs and wants to create an environment that both attracts and retains people.

Through the redevelopment process, and with ongoing management, there is the potential for the revitalisation of a unique asset in the Power Station. Activating the Master Plan Precinct will involve:
_Linking the residents and visitors to core activity precincts
_Concentrating retail tenancies to encourage life and vibrancy
_Maximising possible modes of transport for easy access
_Minimising access routes to channel traffic pas front shops

The following principles were taken into consideration when assessing the economic activation potential for the Power Station Master Plan Precinct.
_Purpose of place
_Access – arrival point
_Origins – car parking and transport nodes
_Exposure – pedestrian movement
_Destination – major attractions
_Control – strategic sites

By supporting these principles of economic activation, the Master Plan Precinct will be a unique place within the urban fabric of Perth. It will include high density residential development integrated into a historical coastal environment, characterised by a vibrant, diverse range of activities. It will be a high amenity sub-regional attractor and a regularly visited destination along Fremantle/Cockburn coastal journey for leisure, events and recreation for users primarily from south of Perth.

The built form and landscape will facilitate entry points and footpath access so that users naturally remain within the precinct for as long as possible and carry out multiple transactions. Attention will also be given to where foot-traffic will originate as it is where users commence their interaction with the centre. Pedestrian movement to and within the Master Plan Precinct will be designed to maximise intensity, connectivity and user interactions. It is important that retail tenancies are located in close proximity to one another as it will concentrate users within a tight walkable catchment and creates a vibrant and active feel. It also improves the commercial viability of the retailers by maximising passing traffic, raising awareness and potentially enticing expenditure.

The major destinations within the Precinct are the Power Station itself and the Piazza. These destinations will draw a significant number of users to the Power Station Precinct by offering unique value propositions. Strategic sites have been identified at each extremity of the Power Station Precinct. These sites have been chosen because of their importance regarding the number of pedestrian and passing traffic but also because of their proximity to major destinations and access points.

The refurbishment of the Power Station structure itself is a catalyst for investment. It will help support an anchor for a future resilient and vibrant local economy can grow and develop.

The economic assessment indicates that the Master Plan design and proposed yields are appropriate in helping to build a value proposition that encourages strong visitation from local, regional, state and national users. The Master Plan also encourages pedestrian flows into the most intense and vibrant nodes within the development and provides for sufficient but not excessive commercial floorspace, at approximately 5,773m², to meet projected demand and employment requirements.

The Master Plan Precinct is a critical component of the overall vision for Cockburn Coast, accounting for the majority of the total centralised employment target for Cockburn Coast. The statutory provisions and management of place provisions will be established through the local structure planning processes.

A complete copy of the Economic Report can be found at Appendix G.

Table 3: Calculation of Power Station Precinct Floorspace Demand

Retail Category	Cockburn Coast Floorspace Demand	%of total Cockburn Coast Floorspace focused within the Power Station Precinct	Power Station Precinct Floorspace Demand
Convenience floor space	8,700m²	20%	1,700m²
Comparison floor space	4, 100m²	80%	3,200m²
Entertainment floor space	3,000m²	80%	2,400m²
Retail floor space	15,800m²	46%	7,300m²

[26] Pracsys, 2014, Power Station Master Plan Economic Report

[27] Pracsys, 2012, Cockburn Coast Economic Development Strategy

08 Metropolitan Region Scheme

Built form and landscape design
Built Form

The Master Plan Precinct built form supports the vision within the DSP and DSP2. Both documents identify development at the Power Station as the most intense urban node in the Cockburn Coast Redevelopment project area.

The Master Plan will incorporate a mix of contemporary buildings, shared streets, a public piazza and most importantly an adapted Power Station building. A mix of commercial, retail and civic uses will be placed within the Power Station to ensure an intensity of activity.

The following principles have influenced the built form within the Master Plan:
_Adaptive reuse of the Power Station to preserve the history of place
_Development respectful of the heritage shipwrecks within the foreshore and public open spaces
_Development sited to ensure compliance with the coastal processes setback line
_Majority of larger development lots to encourage contemporary architecture of an urban scale, while providing for a mix of housing types
_High density residential development to take advantage of the coastal setting, proximity to public transport and proposed activity centre
_Development heights that respond to the prominence of the Power Station structure
_Community access to extensive areas of public open space
_Diversity of movement networks within a grid format linking to key destinations
_Development to encourage and support pedestrian and cycling activity

The guiding principles established the following built form:
_Residential apartment development up to six to eight storeys distributed across the Precinct
_Studio apartments, located above the Boiler House, reflect the scale of the stacks originally part of the Power Station structure
_Retail and commercial development within the Power Station structure, which activates and contributes to a main street in the centre of the development
_Two storey retail / commercial development located with the podium levels residential apartments along the main street

The Precinct will have a strong built form presence in keeping with the vision the new Cockburn Coast.

Landscape
The landscape and quality of the public realm is an important element within the Power Station Master Plan. The landscape design will enhance the foreshore, establish a high quality public piazza, encourage use of public transport and provide green links across the Power Station Precinct. The landscape will support the Power Station as the premier destination in the Cockburn Coast Redevelopment area.

The landscape within the Master Plan Precinct will respond to the requirements of the DSP2. It will integrate water sensitive urban design principles, including native planting with low water requirements and tolerance to harsh coastal conditions. Where possible surfaces will be permeable, rain water harvesting will occur and swales will be used to capture water at the source to promote infiltration.

The specific landscape treatments will be designed to accommodate the expected high levels of public use around the Power Station but also remind the public of the natural resources across the Cockburn Coast Redevelopment area. The landscape design will link the community and visitors into a network of green spaces and opportunities to enjoy the ocean.

The importance of the Master Plan Precinct requires a sophisticated approach to landscape. The design of the public realm must integrate with the Power Station structure and provide different character areas to attract a diversity of users. With some 31,380m^2 of local public open space and 54,278m^2 of foreshore the landscape strategy identifies five general areas to establish character zones across the Precinct:
_Activity – the heart of the Master Plan Precinct including the Power Station structure and public piazza to the north
_Residential – to the north and south of the Power Station
_Green Link – an extension of the regional green network throughout the Cockburn Coast Redevelopment area into the Master Plan precinct
_Beach and sand dune – providing the community access to natural coastal areas
_Streetscapes – designed specifically to prioritise pedestrians' safety and comfort
The most prominent destination is the activity zone, which is the landscape around the Power Station that includes the majority of the public spaces, including the internal Power Station Urban Park, Piazza, Promenade and the interface with the foreshore.

Through the adoption of a Power Station Local Structure Plan a detailed Landscape Strategy will be prepared that includes guidance from a Local Urban Water Management Strategy.

Figure 8.8: Master Plan Landscape Character Zones

Detailed transport and parking analysis
The traffic and parking report [28] prepared for the Master Plan Precinct is based on the principles established in the Cockburn Coast Integrated Transport Plan (ITP)[29]. It demonstrates that the development potential within Master Plan can be accommodated.

The ITP refined the development of transport infrastructure required for development of the Cockburn Coast Redevelopment area. It outlines a number of principles for the implementation of a sustainable transport system including the development of a Bus Rapid Transit corridor, and traffic reduction principles including maximum parking rates. Fundamentally, the ITP shifts transport reliance from the private vehicle to other non-car modes including public transport, walking and cycling to ensure that use of the land can be maximised to support the creation of vibrant, active places.

The traffic and parking report is based on the following:
- The south-west subregion is expected to increase its employment self-sufficiency rate to 70% by 2031, requiring the creation of 41,000 new jobs, an increase from the already existing 52,000 in 2008.
- The Master Plan is located between the economically significant centres of Fremantle, Rockingham, Kwinana and Henderson. It is also well connected to other major employment areas at Cockburn Central and Spearwood Industrial area.
- Traffic demand is based on 5,765m^2 commercial space, 6,672m^2 retail space and 147 dwellings within the Power Station building with an additional 692 dwellings in the remaining Master Plan Precinct.
- Access is provided via Robb Road off Rollinson Road to the north and Cockburn Road (State Route 12), which connects destinations such as Coogee, the Australian Marine Complex at Henderson, the Kwinana Industrial area, Rockingham and Fremantle.
- The major trip attractors and generators include the main street within the Robb Jetty local structure plan, the beach front, the Port Coogee area and the surrounding residential areas. There is also a primary school proposed within the Robb Jetty local structure plan to the north of the Master Plan.
- The East Fremantle to North Cockburn freight rail line which has approximately eight trains per day, all running outside the peak hours, is located to the east of the Master Plan Precinct. There are three rail level crossings providing access for vehicles and pedestrians across the freight rail line in the Cockburn Coast Redevelopment project. Formal at-grade crossings with lights and boom barriers are provided at McTaggart Cove and Rollinson Road. A third temporary crossing has been provided at Old Cockburn Road however, this is presently fenced off.
- Exiting pedestrian, cycle and public transport networks are limited within the Master Plan area due to the abandoned industrial nature of the Precinct.

Rail crossing
One of the most important changes is the proposed access across the freight rail line into the Master Plan area. Post finalisation of the ITP, the Department of Planning, LandCorp, the Public Transport Authority and Main Roads Western Australia reached an agreement on the provision of road crossings over the East Fremantle to North Cockburn freight rail line requiring the McTaggart Cove level crossing to be closed.

The removal of the at-grade crossing at McTaggart Cove is required as one of the conditions for the installation of an at–grade crossing at main street in the Robb Jetty precinct. The road network proposed in the ITP has been amended to include a horseshoe shaped bridge over the freight rail line just east of the Master Plan Precinct. It was necessary to incorporate the Power Station bridge to provide suitable access to the Master Plan Precinct. The Power Station bridge will form the main eastern access to the Master Plan Precinct from Cockburn Road.

Road cross sections
The proposed streets are in keeping with the ITP, which recommended the use of shares streets throughout the DSP2. The Power Station Main Street is a shared street central to the Precinct. Importantly, the Master Plan provides a strong focus on pedestrian access with foot paths provided on both sides of all streets. All streets within the master plan area will have low speed limits (30kph or 10kph) to improve pedestrian safety and reinforce the priority toward pedestrians and cyclists.

Pedestrian and cycle networks
The key elements of the Master Plan's active transport network will be the pedestrian promenade along the front of the Power Station building and a shared path from Cockburn Road to the Power Station building with grade separated crossings of the freight rail line and the Master Plan main street.

Public transport
A Bus Rapid Transit (BRT) corridor will be located along Cockburn Road and through Cockburn Coast, connecting Fremantle to Rockingham. BRT stops will be located close to the two pedestrian bridges across the freight rail line to provide good access for public transport trips to and from the Power Station. The majority of development is within 400-600 metres of the BRT and therefore will be within walking distance of public transport options. The proposed BRT is included in the Department of Transport's Draft Public Transport Network Plan and is expected to be constructed in 2016.

Bridge design
The proposed horseshoe bridge across the freight rail line has been designed to accommodate buses passing on the curves so there will be provision for ad hoc bus or coach trips to the Power Station should there be a demand. The bridge and the road network are suitable to support buses should a future local bus service be required.

Access to public transport services is provided via two pedestrian bridges across the freight rail line at the sports ground to the north and at end of the pedestrian walkway at Cockburn Road.

[28] Parsons Brinkerhoff, 2014, South Fremantle Power Station Master Plan Traffic and parking report

[29] Parsons Brinkerhoff, 2011, Cockburn Coast Integrated Transport Plan

Trip generation
Compared to DSP2, the proposed development within the Master Plan has increased the retail and residential development with a slight decrease in commercial floorspace. The following provides an analysis for the DSP2 at 2031 for the AM, PM peak hours figures with the proposed development within the Master Plan.

Land use type	Change in Yield	AM		PM	
	Quantity	In	Out	In	Out
Dwellings	579	79	236	197	118
Commercial	-4032	-44	-11	-11	-44
Retail	6672	45	11	91	91
		80	237	277	165

Table 4: Peak hour trip generation change from DSP2 Transport Assessment

Cockburn Road and Power Station access
The intersection of Cockburn Road and the Power Station access was previously assessed as part of the DSP2, in the Local Transport and Traffic Management Strategy and found to operate satisfactorily but with minimal spare capacity. Given the increase in trip generation identified by proposed development, the intersection has been reassessed. By providing a second right turn lane out from the Power Station and diverting some of the northbound traffic to McTaggart Cove, the overall performance of the intersection is satisfactory in both peak hours.

The DSP2 and the Local Transport and Traffic Management Strategy proposed that Cockburn Road be upgraded to two lanes in each direction with the addition of several new signalised intersections. Analysis showed that the external network would then operate satisfactorily at 2031 with staged development of Cockburn Coast Redevelopment project area.

Due to its proximity to the signalised intersection, an assessment was also undertaken of the T-intersection where the bridge ramp commences east of the freight rail line. The operation of the intersection is excellent with minimal delays. The access to the ramp on the western side of the freight rail line will be signalised, the only signalised intersection in the Master Plan.

All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Figure 8.9: Master Plan Dwelling Yields

Figure 8.10: Master Plan Building heights

Parking
A fundamental strategy within the ITP is to minimise the amount of parking to promote the use of public and active transport. The ITP set out the following rates to be applied throughout Cockburn Coast:

	Within 400m Public Transport	Greater than 400m Public Transport
Residential	1 per dwelling (regardless of size)	1 per dwelling (regardless of size) plus 1 visitor bay per 4 units
Retail / Commercial	1:75m² GFA	1:50m² GFA

Table 5: ITP maximum parking rates

It is noted that the DSP2 specifies the use of the R-Code Multi Unit Housing Code as the standard for parking for the first five years of development. However, development of the Power Station Master Plan Precinct will not commence within the first five years of development within the Cockburn Coast Redevelopment project area.

Some 525 car parking will be provided within the development lots across the Precinct to meet residential parking demand. The floorspace available within the podium level of lots L, M and N accommodates approximately 535 spaces, greater than the 480 car bays required for the residents in apartments L, M and N and all retail and commercial land uses. The car parking bays will be included in the multi-level parking facility east of the existing Power Station. It is recommended that the access points be provided at the northern end of the car park with the main access from the bridge ramp and a secondary access from the Main Street.

Additional parking will be able to be provided within a parking station on the east side of the freight rail line which is accessed from the Power Station bridge. This parking facility was originally identified in the Local Transport and Traffic Management Strategy and can be used to provide additional parking if more intense uses are planned in the future as the Master Plan area evolves into an activity centre.

It is important to limit the parking provision to the maximum rates specified in the ITP to ensure that car trip demand can be minimised and the priority towards active transport maintained.

Consistent with the findings of the Local Transport and Traffic Management Strategy, there is congestion in the vicinity of the site and limited road capacity however at the assessment horizon of 2031 it is likely that there will be congestion throughout much of the metropolitan area. It is recommended that a second right turn lane be provided on the western approach to the intersection of the Power Station access with Cockburn Road to address congestion. The main intersection providing access to the site would operate at a satisfactory level of service and would not unduly impact Cockburn Road.

A complete copy of the Traffic and Parking Report can be found at Appendix I.

Implementation options, including collaboration, staging, planning obligations and incentives
LandCorp has demonstrated an ongoing commitment to facilitate the urbanisation of the Cockburn Coast. The ability to redevelop the Power Station in a timely manner while accommodating regionally significant infrastructure, is critical to that vision.

LandCorp has established a number of working groups to ensure an integrated approach to planning and development in the area is achieved. The focus is on a collaborative approach, with all relevant agencies to ensure the vision within the Power Station Master Plan. The following important implementation requirements are summaries:
_Switchyard relocation
_MRS amendments
_TPS amendments
_Staging of development

Switchyard relocation
The Infrastructure Servicing Report (2014)[30] identifies a potential location east of Cockburn Road that is suitable for the relocation of the South Fremantle Terminal.

In 2011, Western Power prepared a South Fremantle Load Area Network Options Study[31], a preliminary investigation to determine the limitations of the network over the next 20 years. The study included determining loads up to the year 2030, the future location of the South Fremantle Terminal Substation Switchyard and possible conversion of the system from a 66 kV network to 132 kV.

Western Power consulted with the special working group consisting of Western Power, Department of Planning and LandCorp, created in 2008 to inform the study. Of particular interest was the timeline for an upgrade of the terminal and the long term relocation requirements. The study was limited by the uncertainty surrounding the growth of development scenarios for the area up to the year 2030. The study also indicated that more detailed planning analysis and cost estimates would be required to inform a comprehensive business case. Before works could commence Western Power would be required to progress through a Regulatory Test and New Facilities Investment process, which would need to be assessed by the Economic Regulation Authority.

The special working group reviewed a number of scenarios that would allow for the relocation of the terminal in accordance with the Cockburn Coast Redevelopment vision.

The South Fremantle Terminal Substation Switchyard supplies a network of five other substations from Cottesloe to Cockburn. With the steady growth in demand, the network will reliably supply power for the next 8-10 years with substations catering for loads until 2018/2019.

Three scenarios were reviewed which included the upgrade of existing systems and relocation of substations.
_Option one - Build new 132 kV network and relocate the Myaree Substation
_Option two - Build new 132 kV network at the Myaree Substation
_Option three - Build a new 132 kV network in the South Fremantle Load Area

A number of cost benefits were identified where an upgrade from 66 kV to 132 kV by 2019 was undertaken at the same time as a relocation of the Terminal in the South Fremantle Load Area.

Further detailed investigations will be undertaken to confirm the appropriate site for the relocation of the switchyard, including the preparation of detailed business case to ensure the success of the Power Station Master Plan.

Figure 8.11: Relocation of Switchyard.

[30] Wood and Grieve Engineers, 2014, Infrastructure Servicing Report South Fremantle Power Station Master Plan Area Cockburn Coast

[31] Western Power, 2011, South Fremantle Load Area Network Options Study

08 Metropolitan Region Scheme

Planning Implementation Framework

Metropolitan Region Scheme Amendments
For the Power Station Master Plan Precinct vision to be achieved the MRS needs to appropriately reflect the proposed development. Initially, MRS Amendment 1180/41 lifting of Urban Deferment across Lot 2 and a portion of Lot 3 will need to be finalised. This is an important first step in releasing land for development.

For the full vision of the Power Station Master Plan Precinct to be achieved further MRS Amendments will be required. The following MRS amendments would provide for a comprehensive review of the planning framework for the area:
- Lot 1 (switchyard) currently Public Purpose Reserve amended to Urban zone
- Portion of Lot 3 currently Parks and Recreation Reserve amended to Urban zone
- Portion of Robb Road Reserve currently Railway Reserve amended to Urban zone
- Portion of McTaggart Cove Reserve currently Parks and Recreation Reserve amended to Urban zone

Liaison with the WAPC may be required to ensure the MRS Amendments progress in a manner that supports development commencing in the south of the Master Plan, while the relocation of the switchyard is progressed.

If a marina is progressed in the future, an additional MRS Amendment will be required to rezone Waterways Reserve to Urban and / or Public Purpose Reserve. Such an amendment would be considered a major amendment and would require referral to the Environmental Protection Agency for assessment. Consultation with the community and in particular the Port Coogee residents would be required.

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Town Planning Scheme Amendment
Following the finalisation of the MRS Amendments, a TPS Amendment would be commenced according to the provisions of TPS3. Ultimately this local amendment would rezone the project area from Not Zoned to a Development zone.

The purpose of a Development zone is defined by the TPS3 as "provide(ing) for future residential, industrial, or commercial development in accordance with a comprehensive structure plan prepared under the scheme".

It should be noted that as part of the TPS Amendment the proposal will be subject to a comprehensive public consultation period and the preparation of a Power Station Local Structure Plan.

A number of minor TPS amendments would provide for a comprehensive planning framework:
_Portion of Robb Road Reserve amended to Local Road Reserve
_Portion of McTaggart Cove Reserve amended to Local Road Reserve

In the future, if a marina is progressed, the WAPC requires the land specifically affected by the marina to be shown as Special Use in the TPS3. A Special Use zone is defined as "provide(ing) for uses which have unique development requirements that cannot be easily accommodated by the objectives of any of the other zones included in the scheme". Again, this process would be subject to community consultation.

Power Station Local Structure Plan
The TPS3 specifies the need for local structure plans to be prepared within a Development zone prior to consideration of subdivision or development. A structure plan is required in this instance to ensure coordinated development across the project area and to provide a comprehensive land use framework for subdivision and future development applications. The local structure plan is to be in accordance with the WAPC endorsed DSP and DSP2. It will also accord with the requirements of the WAPC in relation to additional studies, inclusive of:
_Environmental assessments and management strategies associated with the Power Station adaptation and the local green links
_Ethnographic and Aboriginal heritage report
_Local traffic and transport management strategy
_Local water management strategy
_Local economic, retail and employment strategy
_Local community development strategy
_Local infrastructure and servicing strategy

A local structure will include a more detailed assessment of the Power Station precinct and will be subject to further community consultation.

Power Station Design Guidelines
In conjunction with preparing the Power Station Local Structure Plan, a set of comprehensive design guidelines will be prepared to guide the built form of the Power Station site itself and its surrounds. These guidelines will be adopted as a Local Planning Policy by the City of Cockburn.

Note: In respect to stages 3 and 4, under 126(3) of the Planning and Development Act the local authority has the option of requesting the WAPC concurrently rezone Town Planning Scheme No. 3 to the Development zone.

South Fremantle Power Station Master Plan Implementation Flowchart

	Planning Process	Consultation
1	Lifting of Urban Deferred status on Lot 2 and a portion of Lot 3. South Fremantle Power Station Master Plan *Approximately 6 - 12 months*	_Liaison with City of Cockburn _Liaison with government agencies _Public information event
2	Relocate Switch Yard Government Business Case *Within 10 years*	_Liaison with government agencies _Interagency Liaison
3	Initiate Metropolitan Region Scheme Amendments Over Lots 1,2,3, 2167 Robb Road, North Coogee *Approximately 12 - 18 months* - Parks and Recreation Reserve → **Urban Zone** - Public Purpose Reserve → **Urban Zone** - Railways Reserve → **Urban Zone** - Waterways Reserve → **Urban Zone and Public Purpose Reserve (if Marina progressed)**	_Liaison with local authority _Liaison with government agencies _Formal public advertising _Public information event
4	Initiate Local Town Planning Scheme Amendments Over Lots 1,2,3 and 2167 Robb Road, North Coogee *Approximately 12 months* - Parks and Recreation Reserve → **Development Zone** - Public Purpose Reserve → **Development Zone** - Local Road Reserve → **Development Zone**	_Liaison with local authority _Liaison with government agencies _Liaison with Western Australian Planning Commission _Formal public advertising _Public information event
5	Power Station Local Structure Plan and Power Station Design Guidelines *Approximately 12-24 months depending on environmental and heritage requirements.*	_Liaison with local authority _Liaison with government agencies _Formal public advertising _Public information event
	Application for Approval to Commence Development	_Liaison with local authority _Liaison with Western Australian Planning Commission _Formal public advertising

Figure 8.12: Power Station Master Plan Implementation

Staging of development
The staging of development will be dependent upon the planning processes, regulatory requirements, market demand and timing associated with agencies relocating infrastructure. This is a complex mix of influences that will be considered in detail at every stage of development.

The following generic and indicative staging time line provides an overview of how the development will be staged within the Master Plan Precinct. Two critical elements have been specifically highlighted on the critical path; the initial stabilisation, and partial re-use of the power station, and relocation of Western Power's switchyard. These two stages will have a significant impact on the ultimate development of the Power Station Master Plan Precinct and the ability to deliver residential, retail and commercial development.

Indicative Stages	From	To
Power Station Master Plan	01-Jan-12	01-Dec-14
Progress required MRS Amendment	01-Dec-14	01-Jun-15
Progress required TPS Amendment	01-Jun-15	01-Jun-16
Power Station Local Structure Plan and Design Guidelines	01-Dec-15	01-Aug-16
State Cabinet Approval of the Business Case	01-Aug-16	01-Dec-16
Stage 1 South of the Power Station subdivision	01-Dec-16	01-Jun-17
Power Station Stabilisation -Stage 1a	01-Jun-17	01-Jun-19
Switchyard Relocation	01-Jun-19	01-Dec-20
Power Station Adaption and Reuse	01-Feb-21	01-March-21
Decommission switchyard within Master Plan Precinct	01-March-21	01-March-22
Stage 2 North of the Power Station subdivision	01-Jun-22	01-Dec-22

Table 6: Indicative time frames for the staging of development within Master Plan Precinct

Figure 8.13: Indicative Master Plan Staging Plan.

09 Conclusion

The Master Plan comprehensively addresses the requirements of the Western Australian Planning Commission (WAPC) on Metropolitan Region Scheme (MRS) Amendment 1180/41 to lift the 'Urban deferred' status of the site.

The Master Plan:
_Addresses the requirements of the DSP and DSP2 to establish a vibrant urban activity centre that showcases the heritage values of the Power Station.
_Identifies the adaptive reuse of the Power Station building while protecting a place of high heritage significance. Specifically, the Boiler House optimises new development, while the voluminous Turbine Hall is available for commercial, retail, hospitality, tourism, civic and educational uses.
_Incorporates upgrades to the existing sea walls and ponds into the beach front landscape with graded areas, boardwalk and kiosk for improved community amenities.
_After liaison with the PTA the requirement for a grade separated access over the freight rail line has been provided via an integrated bridge design.
_All development is setback from the coastal physical processes setback.
_The movement network facilitates access to the Rapid Bus Transit corridor while providing a focus on pedestrian and cycle networks.
_Demonstrates the processes undertaken to identify the potential for the relation of the switchyard in terms of a power network and residential development.
_Provides for a mix of land uses in support of a vibrant activity centre, focused on the iconic power station building. The high density residential development will ensure the activation of the Power Station and offer a new form of urban living.
_Is based on an economic and retail floor space analysis that demonstrates how the residential, retail, commercial and public purpose land uses work together to provide a sustainable activity centre in and around the Power Station.
_Provides a process for establishing unencumbered land ready for development identifying a number of amendments to the Metropolitan Region Scheme and the local planning scheme and shifting of the switchyard.

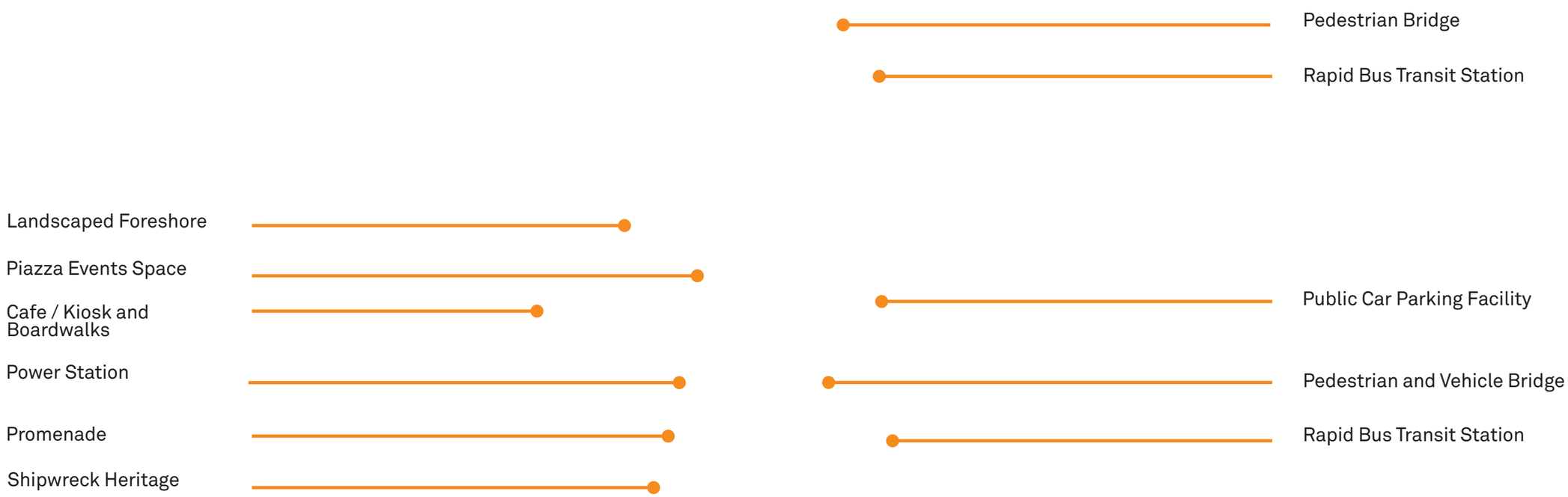
The successful redevelopment of the Power Station and surrounding areas is critical to the achievement of the overall vision for Cockburn Coast, with it being a driver for identity, investment and attraction of a wide range of users to the site.

The Master Plan design and proposed yields are appropriate in helping to build a value proposition that encourages strong vitalisation from local, regional, state and national users. The Power Station will provide the catalyst from which a future resilient and vibrant local community can grow and develop.






Photography by HASSELL.



All foreshore and public realm enhancements are indicative and subject to more detailed design as part of the structure planning processes.

Figure 9.1: Power Station Master Plan within the Cockburn Coast Redevelopment project area.

10 References

_Ecological, 2013, South Fremantle Power Station Site, Desktop Flora and Fauna Assessment

_GHD, 2011, Cockburn Coast District Structure Plan District Water Management

_HASSELL, 2012, Cockburn Coast Foreshore Management Plan

_HASSELL, 2012, District Structure Plan Part 2

_MP Rogers and Associates, 2014, Cockburn Coast – Foreshore Management Plan Costal Vulnerability Assessment and Adaptation

_MP Rogers and Associates, 2014, Cockburn Coast Costal Vulnerability to 2013 SCPP

_Parsons Brinckerhoff, 2013, Cockburn Coast Local transport and Traffic Management Strategy

_Parsons Brinkerhoff, 2011, Cockburn Coast Integrated Transport Plan

_Parsons Brinkerhoff, 2014, Data Gap Analysis Report South Fremantle Power Station, North Coogee, WA

_Parsons Brinkerhoff, 2014, South Fremantle Power Station Master Plan Traffic and parking report

_Pracsys, 2012, Cockburn Coast Economic Development Strategy

_Pracsys, 2014, Power Station Master Plan Economic Report

_TBB, 2008, Cockburn Coast District Structure Plan

_TPG Town Planning Urban Design and Heritage, 2012, Cockburn Coast Cultural Heritage Strategy

_TPG Town Planning Urban Design and Heritage, 2013, South Fremantle Power Station Master Plan, TPG Heritage Summary Report November 2013, Tabled at the Heritage Council of Western Australia December 2013 Meeting

_TPG Town Planning Urban Design and Heritage, 2014, South Fremantle Power Station Master Plan Technical Heritage Study

_Western Power, 2011, South Fremantle Load Area Network Options Study

_Wood and Grieve Engineers, 2011, South Fremantle Power Station Structural Inspection Report

_Wood and Grieve Engineers, 2014, Infrastructure Servicing Report South Fremantle Power Station Master Plan Area Cockburn Coast

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